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March 1988

History of Whaling In and Near North Carolina

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Edward Mitchell

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CONTENTS

Introduction *1*

Materials and Methods *3*

Results and Discussion
- Origins *3*
- Whaling as a well established industry *6*
- Continuity of the whale fishery after the 1750s *7*
- Methods and techniques *8*
- Whaling season *11*
- Grounds *11*
- Species composition *14*
- Pod characteristics *16*
- Naming of individual whales *17*
- Effort *17*
- Product yields *18*
- Catch levels *19*
- Hunting loss *20*
- Economics *20*
- Whaling in adjacent and nearby states *21*
  - Virginia *21*
  - Maryland *21*
  - South Carolina and Georgia *21*
  - Florida *22*

Summary and Conclusions
- Origins *22*
- Technology *22*
- Trends in whaling effort and stock size *23*
- Rates of removal *23*
- Stock survival and current distribution *24*

Acknowledgments *24*

Citations *25*

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ABSTRACT

This study aims to reconstruct the history of shore whaling in the southeastern United States, emphasizing statistics on the catch of right whales, *Eubalaena glacialis*, the preferred targets. The earliest record of whaling in North Carolina is of a proposed voyage from New York in 1667. Early settlers on the Outer Banks utilized whale strandings by trying out the blubber of carcasses that came ashore, and some whale oil was exported from the 1660s onward. New England whalemen whaled along the North Carolina coast during the 1720s, and possibly earlier. As some of the whalemen from the northern colonies moved to North Carolina, a shore-based whale fishery developed. This activity apparently continued without interruption until the War of Independence in 1776, and continued or was reestablished after the war. The methods and techniques of the North Carolina shore whalers changed slowly: as late as the 1890s they used a drogue at the end of the harpoon line and refrained from staying fast to the harpooned whale, they seldom employed harpoon guns, and then only during the waning years of the fishery.

The whaling season extended from late December to May, most successfully between February and May. Whalers believed they were intercepting whales migrating north along the coast. Although some whaling occurred as far north as Cape Hatteras, it centered on the outer coasts of Core, Shackleford, and Bogue banks, particularly near Cape Lookout. The capture of whales other than right whales was a rare event. The number of boat crews probably remained fairly stable during much of the 19th century, with some increase in effort in the late 1870s and early 1880s when numbers of boat crews reached 12 to 18. Then by the late 1880s and 1890s only about 6 crews were active. North Carolina whaling had become desultory by the early 1900s, and ended completely in 1917.

Judging by export and tax records, some ocean-going vessels made good catches off this coast in about 1715-30, including an estimated 13 whales in 1719, 15 in one year during the early 1720s, 5-6 in a three-year period of the mid to late 1720s, 8 by one ship's crew in 1727, 17 by one group of whalers in 1728-29, and 8-9 by two boats working from Ocracoke prior to 1730. It is impossible to know how representative these fragmentary records are for the period as a whole. The Carolina coast declined in importance as a cruising ground for pelagic whalers by the 1740s or 1750s. Thereafter, shore whaling probably accounted for most of the (poorly documented) catch.

Lifetime catches by individual whalemen on Shackleford Banks suggest that the average annual catch was at least one to two whales during 1830-80, perhaps about four during the late 1870s and early 1880s, and declining to about one by the late 1880s. Data are insufficient to estimate the hunting loss rate in the Outer Banks whale fishery.

North Carolina is the only state south of New Jersey known to have had a long and well established shore whaling industry. Some whaling took place in Chesapeake Bay and along the coast of Virginia during the late 17th and early 18th centuries, but it is poorly documented. Most of the right whales taken off South Carolina, Georgia, and northern Florida during the 19th century were killed by pelagic whalers. Florida is the only southeastern state with evidence of an aboriginal (pre-contact) whale fishery. Right whale calves may have been among the aboriginal whalers' principal targets.

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Introduction

The technology for killing and securing whales at sea had been developed by the Basques well before North America was colonized. By the early 17th century the essential know-how had been conveyed to the British and Dutch as well. Among those seamen who immigrated to the New England colonies and New York during the 17th century were some men who knew, or quickly learned, the whaling trade. Captain John Smith (1624, p. 204) was part of a British expedition to New England in 1614: "Our plot was there to take Whales, for which we had one *Samuel Cramton* and divers[e] others expert in that faculty." In deciding where to settle, whether on Cape Cod or elsewhere, the Plymouth pilgrims in 1620 took account of the cape's favorable prospects for whaling:

> ...it is a place of profitable fishing; large whales of the best kind for oil and bone [i.e. right whales], came daily along side and played about the ship [*Mayflower*]. The master and his mate, and others experienced in fishing, preferred it to Greenland whale-fishery, and asserted that were they provided with the proper implements £3,000 or £4,000 worth of oil might be obtained (Thacher 1832, p. 20).

Some whaling equipment was at hand, as evidenced by the theft of a "harping iron" [i.e. harpoon] from one of the mariners (*ibid.*, p. 21).

It was inevitable that the whaling industry would develop and flourish on those parts of the North American coast particularly suited to the enterprise. Long Island, New York, is generally credited as the site of America's first organized commercial shore whaling venture (Starbuck 1878, p. 9), though the activity was also well established around Delaware Bay and several parts of New England well before the end of the 17th century (Macy 1835; Allen 1916; Lipton 1975; Little 1981).

Colorful and intrinsically interesting as the history of whaling may be, our own concern for it has a practical origin. Scientists and conservationists have long recognized the North Atlantic right whale, *Eubalaena glacialis* (Fig. 1), as a species in danger of extinction due to several centuries of exploitation. With the signing of the Convention for the Regulation of Whaling in 1946 and the subsequent formation of the International Whaling Commission in 1949, right whales in all oceans were protected from commercial hunting. However, there has until recently been little evidence that the stocks of right whales were recovering (IWC 1986).

The right whale was one of seven species of large whale hunted commercially off eastern North America. The sperm whale, *Physeter catodon*, and humpback whale, *Megaptera novaeangliae*, along with the right whale and its arctic equivalent, the bowhead whale, *Balaena mysticetus*, were the species most often taken before the development of explosive harpoons and powered whaling vessels. It was not until modern whaling technology became available during the second half of the 19th century that the fast-swimming balaenopterine whales—the blue, *Balaenoptera musculus*; fin, *B. physalus*; sei, *B. borealis*; and Bryde's, *B. edeni*—could be systematically pursued as well (see Tønnessen and Johnsen 1982, for a review of the development of modern whaling).

In June 1983 a workshop in Boston, Massachusetts, reviewed what was known about the world's right whales and evaluated the status of the stocks (IWC 1986). It was agreed that in the North Atlantic there probably were no more than a few hundred animals surviving in the early 1980s, all of them believed to belong to a western North Atlantic stock. In a paper presented to the workshop, we discussed several hypotheses concerning stock relation-

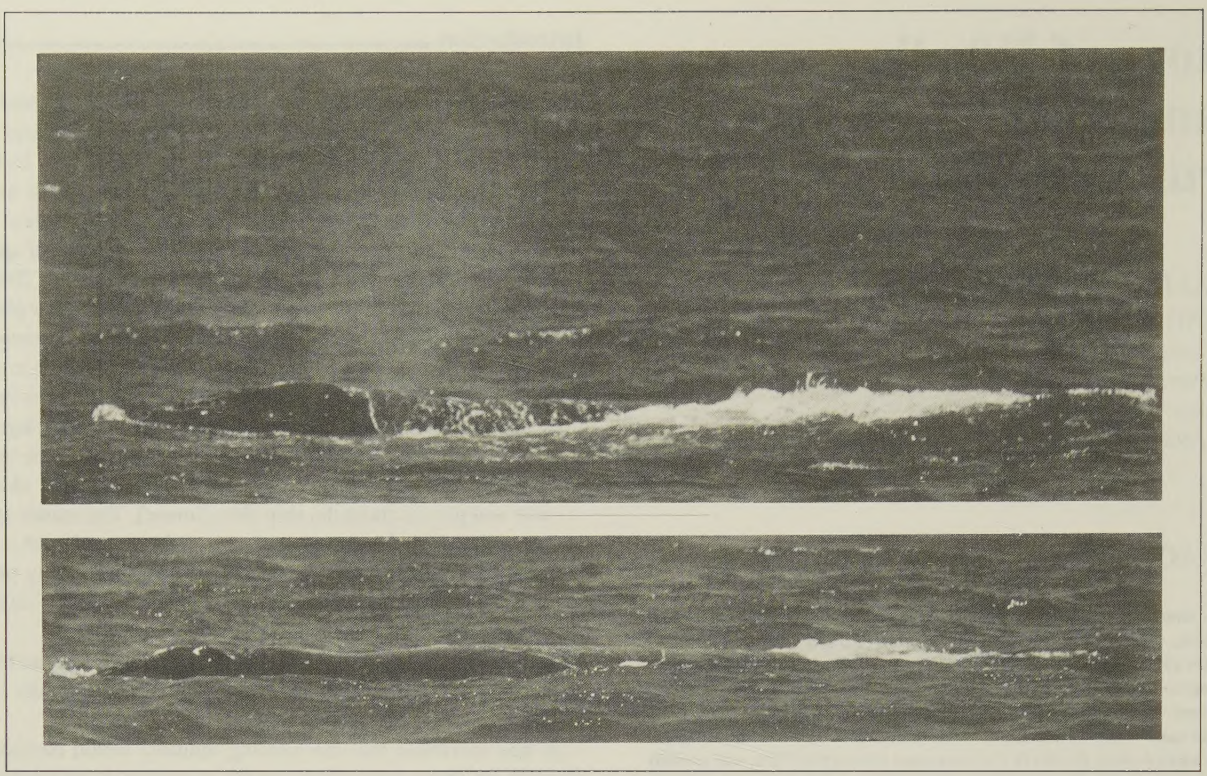

Figure 1
One of two right whales observed off Bogue Banks, NC, June 1981. (Photos by Lisa Taylor, courtesy James G. Mead)

ships in the North Atlantic (Reeves and Mitchell 1986b). It seemed likely, based on historical data as well as the pattern of recent sightings and strandings (Mead 1986; Winn et al. 1986), that one stock of right whales migrated between winter grounds along the southeast coast of the United States and summer grounds in the lower Bay of Fundy and on the banks south and east of Nova Scotia. Such a migration has since been demonstrated through field observations, documented with photographs, of individually identifiable whales occurring along the coasts of northeast Florida and Georgia in February and March, off New England in March, April, and May, and in the Bay of Fundy and the Browns-Baccaro Banks region of the Scotian Shelf in July, August, and September (Kraus et al. 1986).

Because of the geographic scope (from Labrador and possibly Cape Farewell, Greenland, south to Florida), longevity (from the 1500s or earlier to the early 1900s), and technological diversity of the whaling for right whales in the western North Atlantic, we needed to tackle the history of this enterprise off eastern North America in stages. Thus, we considered the whaling by vessels at sea ("pelagic" whaling) a separate subject (Reeves and Mitchell 1986b). We identified four areas where shore-based whaling became firmly established and continued over two or more centuries. These are New England, Long Island, New Jersey, and North Carolina. The Long Island story has been told (Edwards and Rattray 1932; Reeves and Mitchell 1986a), and the North Carolina fishery (together with the limited coastal whaling activity in Maryland, Virginia, South Carolina, and Florida) is covered in this report. Shore whaling in New England and New Jersey was reviewed by Allen (1916), Little (1981), Weiss et al. (1974), Lipton (1975), and Reeves and Mitchell (1987). The fishery for right whales off and along the coasts of Newfoundland and Labrador and in the Gulf of St. Lawrence was mentioned by Tuck and Grenier (1981), Reeves and Mitchell (1986b), and Cumbaa (1986), but a rigorous and thorough review of this fishery has yet to be published.

The main objective in our studies of the right whale fisheries has been to assemble a quantitative summary of fishing mortality covering as long a period of years as the available historical resources permit. As will be seen presently in the case of North Carolina, there are formidable obstacles. It is mostly by chance that a literate observer was present when a whale was brought ashore, thus leaving an enduring record of the event. There was no formal recordkeeping procedure (at least no evidence of one has survived and come to our attention), so we can only infer, assume, and extrapolate, sometimes even guess, in order to get some idea of the rate at which right whales were removed. The records that survive are usually unsatisfactory, but we hope that enough information will finally come to light to support a crude estimate of early population size and reveal trends in abundance through time.

Materials and Methods

The published and manuscript materials used for this study were found principally in libraries and other collections in North Carolina. We looked for information in the David Stick Library at Southern Shores, the Southern Historical Collection and North Carolina Collection at Chapel Hill, the Search Room of the State Archives and the library and files of the State Museum of Natural Sciences at Raleigh, and local libraries at Beaufort and Morehead City. The Outer Banks whale fishery is well advertised as part of the history of Carteret County, and there is a plethora of retrospective newspaper articles, genealogical notes, and oral histories mentioning or describing the activities of the whalers. In addition to searching these sources, we interviewed local people in Beaufort and Morehead City who have family connections to the 19th- and early 20th-century whalemen. As far as we could ascertain, no one with first-hand experience of the whale fishery was alive in 1985 when our study began.

Contemporary newspapers, particularly those whose readership may have had a stake in the fishery's outcome, can be useful sources of information on whale catches and whaling effort (e.g., see Allen 1916; Reeves and Mitchell 1986a). No newspapers were established in Beaufort and Morehead City during the 18th century (see Crittenden 1928) and only a few during the 19th. Only a small fraction of the issues of Beaufort and Morehead City 19th-century newspapers survives in public holdings (Jones 1971). We checked all the pre-1900 newspapers available for these two towns, and we sampled those available for New Bern, Wilmington, Washington, and Raleigh. Import records for London and British outports were checked in the Public Record Office, Kew, London (Table 1), and records of exports of whale products from North Carolina ports were checked in the North Carolina State Archives (Table 2). These sources provided information on whale oil ("train oyle") and baleen ("whalebone" or "whale fins") production.

Only one scientific naturalist is known to have observed the whaling activities on the Outer Banks. H.H. Brimley arrived in North Carolina in 1880 and remained until his death in 1946 (Odum 1971). During this period, he made at least two trips to the Cape Lookout area, where he watched whales being processed on shore and visited with the whalemen. He also collected two entire skeletons of right whales killed in the fishery, as well as the skeletons of a sperm whale stranded at Wrightsville Beach in 1928 (Fig. 2; Reynolds 1930; Mitcham 1964) and a fin whale stranded at Cape Lookout in 1905. The sperm and fin whales and one of the two right whales are on display at the North Carolina State Museum in Raleigh. Brimley had a clear and abiding interest in whaling, and his published articles and unpublished correspondence and notes, taken together, comprise a useful account of North Carolina whaling. We made a special effort to locate and examine all of Brimley's relevant work.

Results and Discussion

Origins

By 1666 the coast of North Carolina was recognized as a promising whaling ground. In that year Humphrey Hughes of Long Island, New York, secured from Peter Carteret, secretary of Albemarle County, a lease for whaling between "the Inlet of Roanoak and the island of Caretuck" (Palmer 1959, p. 12-14). In return, Hughes was to pay 1/15 of the oil and bone to the Lords Proprietors of Carolina. Hughes formed a partnership in April 1667 with John Cooper, a Southampton whaling entrepreneur, and Nicholas Steevens, a Boston merchant and sea captain, "to go themselves or by a competent agent to Roanoak to those parts upon the designe of killing or getting whales or great fish for the procureing of oyle." Plans were laid for the sloop *Speedwell*, under command of Steevens and with a crew of 13 men and a boy, to depart Southampton by mid-September 1667. The vessel apparently was to call at Boston before proceeding south to Carolina for a 6-8 month cruise. Unfortunately, we have no further record of this early whaling venture.

"Whale fishing" was mentioned in 1669 in the Fundamental Constitutions of Carolina (Saunders 1886a, p. 205; Clark 1906, p. 135). However, the beginnings of shore whaling in North Carolina are difficult to determine precisely. As early as the 1660s residents of the Outer Banks processed drift whales (Stick 1958, p. 22-24, 266) and sold quantities of whale oil (Parker 1968, p. xx). In about 1668 Peter Carteret was exporting oil from the Albemarle region to London (Cain 1981, p. xxii). He had, by 1673, shipped a total of 195 barrels. According to shipping records supplied to us by R.J. Cain (*in litt.*, 16 June 1986), whale oil was also exported from North Carolina to Barbados (28 barrels in 1685 and an unspecified amount in 1686 aboard the *John and Thomas* of Roanoke), to Massachusetts (27 barrels aboard the *Adventure* of "Curretuck" in 1688), to Jamaica (6 barrels aboard the *Sparrow* of Boston in 1690), and to New Hampshire (an unspecified amount aboard the sloop *Peter* in 1697; Parker 1971, p. xix). Small amounts of baleen were imported to Great Britain directly from Carolina in 1697-98 (Table 1). Whale oil and baleen were used in early colonial North Carolina as "commodity money" to some extent (Cain 1981, p. xxii; Parker 1971, p. 122, 204-07, 414-15). In 1681 all residents of North Carolina were granted:

> ...free leave for the space of seaven years to commence from Michaelmas next to take what whales they can and convert them to their own use... (Saunders 1886a, p. 338; Cain 1984, p. 359-60).

This concession was renewed in 1691 for a term of 20 years (Cain 1981, p. xxi). A squabble over a dead whale was brought to the general court of Albemarle County for resolution in 1694 (Saunders 1886a, p. 419; Parker 1968, pp. 18-19, 43, 74). One of the parties involved had "a Lycence from the Hon'ble Governor for whaling."

In the first decade of the 18th century, when John Lawson visited the Carolinas, the organized pursuit and killing of whales along the coast seem still not to have been established there, "altho' we have Plenty of Whales" (Lawson 1966, p. 86). A few people on the Outer Banks processed carcasses "cast on Shoar," but the whales were not "struck or kill'd with a Harpoon in this Place, as they are to the Northward, and elsewhere" (Lawson 1966, p. 153). In 1702 Samuell Paine was the official collector of the tenths of whale oil and bone reserved for the Lords Proprietors (Price 1974, p. 13), and oil and "whale bone" were occasionally

Table 1

Whale oil and baleen imported from Carolina, Virginia, and Maryland, 1696-1733, from British customs ledgers. Source: CUST 2 and 3, Public Record Office, Kew, London.

Period	Exported from	Oil (Imperial gals.)[1]	Baleen (lbs)[2]	Est. value (£:s:d)
25 Sept. 1696 - 25 Sept. 1697	Virginia/Maryland	578	1,011	58:11:4 1/2
	Carolina	–	196	5:5:0
25 Sept. 1697 - 25 Sept. 1698	Virginia/Maryland	–	168	10:13:9
	Carolina	–	560	35:12:6
25 Sept. 1698 - 25 Dec. 1699	Virginia/Maryland	1,134	126	82:14:0 3/4
25 Dec. 1699 - 25 Dec. 1700	Virginia/Maryland	–	317	22:12:10
25 Dec. 1700 - 25 Dec. 1701	Virginia/Maryland	–	164	11:15:8
25 Dec. 1705 - 25 Dec. 1706	Virginia/Maryland	–	40	2:18:11
25 Dec. 1706 - 25 Dec. 1707	Virginia/Maryland	–	193	13:5:8
25 Dec. 1707 - 25 Dec. 1708	Virginia/Maryland	308	654	64:9:10
25 Dec. 1709 - 25 Dec. 1710	Carolina	2,520	–	144:0:0
	Virginia/Maryland	–	154	11:0:0
25 Dec. 1710 - 25 Dec. 1711	Carolina	8	–	0:7:7 1/4
	Virginia/Maryland	–	92	6:11:5
25 Dec. 1712 - 15 Dec. 1713	Virginia/Maryland	945	95	57:15:8 1/2
25 Dec. 1713 - 25 Dec. 1714	Carolina	1,050	–	60:0:0
25 Dec. 1714 - 25 Dec. 1715	Virginia/Maryland	53	784	5:16:0
	Carolina	557	–	31:10:0
25 Dec. 1715 - 25 Dec. 1716	Carolina	210	–	12:0:0
	Virginia/Maryland	35	–	2:0:0
25 Dec. 1716 - 25 Dec. 1717	Virginia/Maryland	–	44	3:2:10
25 Dec. 1717 - 25 Dec. 1718	Carolina	59 1/2	–	3:6:8
25 Dec. 1718 - 25 Dec. 1719	Virginia/Maryland	64 1/2	–	2:17:1
25 Dec. 1720 - 25 Dec. 1721	Carolina	2,680	–	152:12:4
25 Dec. 1721 - 25 Dec. 1722	Carolina	–	1,022	73:0:0
25 Dec. 1723 - 25 Dec. 1724	Virginia/Maryland	315	196	32:0:0
25 Dec. 1724 - 25 Dec. 1725	Carolina	254 1/2	–	14:2:4
	Virginia/Maryland	787 1/2	–	45:0:0
25 Dec. 1725 - 25 Dec. 1726	Carolina	661	112	41:4:6
	Virginia/Maryland	136	–	7:9:6
25 Dec. 1727 - 25 Dec. 1728	Carolina	952	386	81:17:11
25 Dec. 1728 - 25 Dec. 1729	Carolina	131	15	8:6:1
25 Dec. 1729 - 25 Dec. 1730	Virginia/Maryland	52 1/2	–	3:0:0
	Carolina	4,337	86	253:13:4
25 Dec. 1732 - 25 Dec. 1733	Carolina	210	–	12:0:0

[1]Amounts converted from original units by: 1 tun = 210 Imperial gals; 1 hogshead = 52 1/2 Imperial gals; 1 gal. = 1 Imperial gal.
[2]Amounts converted from original units by: 1 cwt = 112 lbs; 1 quarter = 28 lbs; 1 lb = 1 lb.

mentioned in court records as personal possessions (e.g., in 1705, *ibid.*, p. 162). A suit was brought in 1714 against a man whose wife broke the law by trading "Two foules or Dunghill Cockes" to another man's slave woman in exchange for "Two sticks of whailebone" (Price 1977, p. 68). The Lords Proprietors expressed a keen desire to develop the whale fishery in 1709. They asked the governor to report on "the state of the Whale fishing and what further encouragement is proper & fitting for us to give to encrease the same" (Saunders 1886a, p. 706).

In 1715 a letter was sent from the Palatine and two other proprietors to the governor, urging him to issue three-year licenses "to any New England Men or others to catch Whale, Sturgeon or any other Royal Fish upon your coast" (Saunders 1886b, p. 175-176). In the same year, whale oil, rated at £1:10:0 per barrel, became one of the officially established forms of currency in the province of North Carolina (Cain 1981, p. xxii). The rate was increased to £2:10:0 per barrel in 1729 (*ibid.*, p. xxviii). A mariner from Boston, John Royal, purchased six lots in Beaufort in 1715, possibly to take advantage of the whaling initiative (Paul 1965, p. 94; 1967, p. 118*n*). Certainly by 1720 at least one whaler from New England, Samuel Butler, had sailed in a sloop for North Carolina "in order to procure a License to Whale" (Saunders 1886b, p. 397; Cain 1984, p. 103). A Captain John Records, a Captain Thomas, "& others" were whaling "on the Sea Coast of port Beaufort" in the 1720s and possibly from as early as 1714 (Vice-Admiralty Papers, Vol.I, fo. 22, 24,28, State Archives, Raleigh, NC). Salter (1975b) queried whether Records was a permanent resident of North Carolina or a New Englander: "It...seems likely that he did not settle in the county [Carteret]—or else had died—since he is not included in the list of twenty-nine freeholders for 1723." A sloop belonging to Thomas Brown of Virginia was condemned in North Carolina in May 1722, with seven barrels of oil and two bundles of whalebone included in its cargo (Vice-Admiralty Papers, Vol. I, fo. 26, State Archives, Raleigh, NC).

Table 2

Exports of whale products as recorded in the Treasurer's and Comptroller's Papers, Ports, North Carolina State Archives (courtesy of Wilson Angley, Research Branch).

Date cleared	Vessel	Vessel tonnage	Master	Type of product	Destination
Port Beaufort					
27 April 1785	Sloop *Nancy*	20	John Gorton	Whalebone	Rhode Island
22 May 1787	Schooner *Nancy*	12	Solomon Fuller	Oil	Baltimore
Feb. 1788	Schooner *Raven*	18	- Warback	Oil (1 cask)	Swansboro
31 May 1788	Sloop *Industry*	30	- Hubble	Oil	Philadelphia
16 June 1788	Sloop *New York Packet*	60	- Griffin	Oil	New York
17 Feb. 1789	Sloop *Friendship*	65	- Johnston	Oil (3 casks)	Bath
17 April 1789	Sloop *Charlotte*	18	Samuel Chadwick	Oil	Boston
25 April 1789	Schooner *Polly*	65	- Turner	Oil (2 barrels)	West Indies
2 May 1789	Schooner *Betsey*	80	- Smith	Oil	England
7 May 1789	Schooner *Fanny*	60	Benj. Leecraft	Oil (6 barrels)	Guadeloupe
29 Dec. 1789	Schooner *Active*	67	[illegible]	Oil	Roanoke
Port Currituck					
17 Oct. 1784	? *Lively*	?	John Litchfield	Oil	Baltimore
15 Sept. 1785	? *Lively*	?	Jacob Litchfield	Oil	Baltimore
19 June 1786	? *Sally*	5	Caleb Chaplan	Oil	Baltimore
28 Nov. 1788	? *Nancy*	15	Solomon Ashby	Oil	Baltimore
Jan. 1789	? *Sally*	9	William Arthur	Oil	Baltimore
17 April 1789	? *Industry*	12	John Cudworth	Oil	Baltimore
20 May 1789	? *Polly*	5	Mark Davis	Oil	Richmond
30 June 1789	? ?	5	William Price	Oil	Virginia
Port Brunswick					
July 1764	? ?	?	?	Spermaceti candles	London
[1767]	? ?	?	?	Oil	Bay of Honduras
13 Jan. 1787	Ship *Minerva*	100	Gideon Freeborn	Oil	Dublin
30 June 1787	Schooner *Wilmington Packet*	30	Luke Swain	Oil	Charleston
17 April 1788	Brig *Polly*	?	Edmund Case	Oil & spermaceti candles	St. Bartholomew
5 Dec. 1788	Schooner *Good Hope*	?	Henry Hunter	Oil	St. Eustatius
1 Dec. 1789	Schooner *Sally*	38	Thomas Potter	Oil	Martinique
Port Roanoke					
30 Jan. 1775	Schooner *Lucy*	25	Asa Hatch	Whale blubber	Salem, Massachusetts
4 March 1786	Schooner *Phoenix*	60	John Barry	Oil	St. Bartholomew
Port Bath					
1785	Brig ?	?	?	5 casks oil	?

Figure 2

Sperm whale stranded on Wrightsville Beach, NC, 6 April 1928. (North Carolina Collection, Univ. N.C. Library, Chapel Hill)

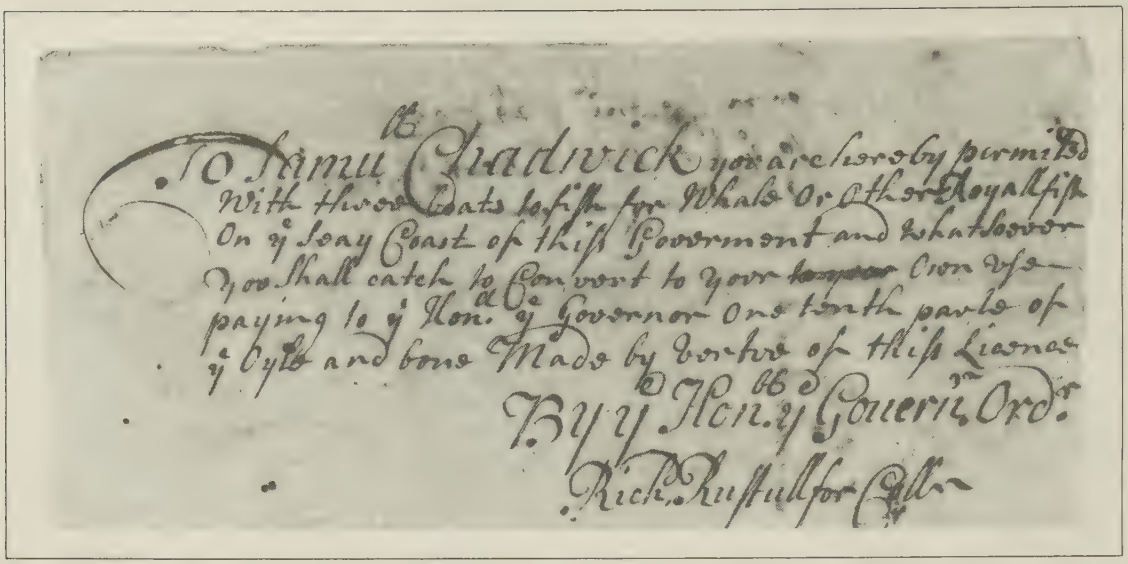

Figure 3
Whaling license issued to Samuel Chadwick, 1725. (N.C. Dep. Cult. Resour., Div. Archives Hist., Archives Rec. Sect., Raleigh)

A lease in 1723 allowed Governor George Burrington, Christopher Gale, and John Lovick to take whales along the coast between Cape Fear and Currituck Inlet for a term of seven years (Cain 1981, p. xxi*n*; Saunders 1886b, p. 489-90). Also in 1723, John Dunston, a naval officer, was appointed "receiver of the Tenths of our Fishery" by the Lords Proprietors (Cain 1984, p. 529). A whaling license was issued in 1726 to Samuel Chadwick, an immigrant from New England (Hathaway 1901, p. 298; Fig. 3). Chadwick and three other residents of Carteret precinct, Bath County, were permitted to whale with three boats, on condition that they surrender to the governor "one tenth parte of ye Oyle and bone." When Chadwick bought 130 acres at Straits, NC, in 1725 he described himself as "late of New England but now an inhabitant of Carteret Precinct," and Muse (1961, p. 7) speculated that he may have "fished" [whaled?] on the Carolina coast before 1726.

British customs records contain little evidence of whale-product imports from Carolina during the first third of the 18th century (Table 1). This may be explained, at least in part, by the fact that much of the oil and baleen was either consumed in the colonies or exported to other colonies (e.g., New England) for re-export.

Ebenezer Harker of Port Beaufort was deputized by the Receiver General for North Carolina in about 1730 "to Receive the Tenths of whale Oyl and Bone Catched on the Sea Coast of this province for two years past" (Vice-Admiralty Papers, Vol. I, fo. 22, State Archives, Raleigh, NC). However, the tax on whale products was abolished in 1730, as the new royal colony of North Carolina sought to "give all possible encouragem't" to the whale fishery (Saunders 1886c, p. 99, 214; Cain 1984, p. 597-98). With the order abolishing the tax, the Crown attempted to collect those tenths of "Whale Oyle and Bone" that had been claimed previously, without authorization, by officials other than the governor (Cain 1984, p. 185-86). The abolition of the tax meant that records of the whaling industry, such as tenths of oil and whalebone paid, would even less likely be preserved after the early 1730s than before (see Simpson and Simpson 1988 for a detailed discussion). The Vice Admiral's commission in 1730 gave him jurisdiction over "Royal Fishes videlicet Sturgeons, Whales Cetes, Porpuises Dolphins, Riggs and Grampus's and in generall of all other Fishes whatsoever having in them a great or huge thickness or fatness, of ancient Right to us belonging or pertaining or any way accustom'd" (Cain 1984, p. 582).

The evidence of continued whaling consists of isolated and sometimes indirect references to the fishery. For example, in 1731 a suit was brought against William Little concerning his receipt of "a small Quantity of Oyle in Certain Contracts made at Land with the Whalers" (Saunders 1886c, p. 231; Cain 1984, p. 200). An inventory made on 15 February 1734 of the goods belonging to the sloop *Middleborrough,* Edward Fuller, Master, included two blubber spades, three oars, four "Lances for Whaleing," a blubber hook, and 39 empty barrels (Vice-Admiralty Papers, Vol. I, fo. 70, State Archives, Raleigh, NC).

Whaling as a well established industry

According to Muse (1961, p. 4):

> Masters of the early New England whaling sloops landed them with tackle and stores in Port Beaufort during the months from Christmas to April. They then set up camps on the Sandy Banks off shore and the whalers went out from there in small whaling boats.

Muse seems to have enlarged considerably upon the sparse statement cited to support her account. Arthur Dobbs, Governor of North Carolina, simply noted concerning Cape Lookout in 1755 that "the whale fishers from the Northward have a considerable fishery from Christmas to April, when the whales return to the northwd" (Saunders 1887, p. 346). Stick (1958, p. 309) interpreted this to mean that New England whaling vessels "used Cape Lookout Bight as a base of operations" during the middle of the 18th century. They supposedly anchored their vessels near Cape Lookout and lowered boats to capture whales within sight of shore (*ibid*., p. 185).

The journal of Ashley Bowen of Marblehead, Massachusetts, contains information suggesting that whalers from the north whaled off North Carolina in the manners described by both Muse (1961) and Stick (1958) (Smith 1973, p. 33-41). Bowen was master of the sloop *Susannah* which sailed out of Cape May, New Jersey, in November 1753. In addition to her mercantile mission, the sloop was engaged to carry 12 whalemen and their "appurtenances," including two whaleboats, to the coast of North Carolina and from there back to Cape May the following March. The *Susannah* kept close along the coast to Cape Lookout, reached on 10 December. She was joined there by three whaling sloops from Nantucket. Of these, the vessels under Captain Macy and John Starbuck were "bound for Cape Fear in order to try another berth for whaling at the south" (p. 36). Apparently the whalemen aboard the *Susannah* decided to establish themselves in the Cape Fear area as well. Before wind conditions permitted the vessels to leave Cape Lookout harbor, however, Bowen reported (on 13 December): "We saw a whale close under our sterns, but the wind blows so hard and a large sea [running] that we could not engage him" (p. 37). It thus appears that, for a time at least, the sloops were anchored at Cape Lookout and prepared to lower their boats after whales as the opportunities arose (cf. Stick 1958). After ascending the Cape Fear River to Wilmington, apparently to deliver cargo and passengers, the *Susannah* proceeded back downriver and over the bar of Cape Fear, thence to Lockwood's Folly (Lockwood Folly Inlet). At Lockwood's Folly the whalemen took their gear ashore and established camps on the west side of the inlet (cf. Muse 1961). On 1 January 1754: "Our people went after a fish but found it to be a mewgin [?]" (p. 40). Bowen summarized his winter on the North Carolina coast (p. 41): "I tarried in Cape Fear River all winter. The whalemen at Lockwood's Folly got nothing". In March 1754 Bowen and the *Susannah* set sail for Cape May, "with 12 men and all their empty barrels, butts, and appurtenances." He complained that they "did not get a drop of oil," and in consequence, Bowen himself lost £12 from having supplied one of the men. This marked the end of Bowen's direct involvement in whaling, and there is no suggestion from his account that the venture from Cape May to North Carolina was repeated in subsequent years.

Dobbs noted in 1754 that the harbor at Cape Lookout was "now used by our Whale fishers in the winter" (Saunders 1887, p. 159). Incidentally, the Instructions for Trade given to Dobbs in 1754 included the following (Saunders 1887, p. 1134-5):

> ... whereas for some years past the Governors of some of our plantations have seized and appropriated to their own use the produce of whales of several kinds taken upon those Coasts upon the pretence that whales are Royal fishes which tends greatly to discourage this branch of fishery in our Plantations and to prevent persons from settling there, it is therefore our Will and Pleasure that you do not pretend to any such claims nor give any manner of discouragement to the fishery of our subjects upon the coasts of the Province of North Carolina under your government but on the contrary that you give all possible encouragement thereto.

In our previous studies of American pelagic whaling in the North Atlantic (Mitchell and Reeves 1983; Reeves and Mitchell 1986b), we found little evidence that the New England whalers visited the North Carolina coast in winter for right whales, but we examined very few 18th-century logbooks or journals. The Outer Banks may have been among the areas "along the gulf stream and other regions farther south" where colonial whalers cruised in the 1760s (Tower 1907, p. 35).

Clark (1887a, p. 48) knew of only two New England vessels coming to this area: the *Daniel Webster* in winter 1874-75 and the *Seychelle* in winter 1878-79.[1] During a three-week period in May 1719, four New England vessels (*Eagle, Union, Plymouth, Harwich*) brought into the port of Boston over 510 barrels of oil and an unspecified quantity of whalebone from North Carolina (Cain 1981, p. xxii; *in litt.*, 16 June 1986). Smaller amounts of North Carolina oil and whalebone arrived in South Carolina (*Susannah* in 1725), Virginia (*Adventure* in 1726), and New Jersey (*John and Mary* in 1727). Some time before 1730 two boats came from the northward to Ocracoke Island for whaling. Their catch in one season produced 340 barrels of oil and an unspecified quantity of baleen (Brickell 1968, p. 220). These whalers failed to pay the 1/10 tax to the Governor, and "they never appeared to fish on these Coasts afterwards". Josiah Doty was master of a sloop which came with several boats to the Cape Lookout area in 1727 (Stick 1958, p. 34). Doty and his crew took "a great number of whales," producing 300 barrels of oil and "one thousand weight of whalebone." Stick judged, based on "numerous old deeds, grants, and maps" with references to whalers' huts or camps, that "at about this time" Cape Lookout became "the headquarters" of the New England whalers and the Carolina shore whalers. Possibly for part of the 18th century at least, whaling from shore by newly settled residents and whaling by vessels from New England occurred simultaneously.

Continuity of the whale fishery after the 1750s

In about 1880 Clark (1887a, p. 48) noted that the North Carolina shore whale fishery had been "prosecuted continuously for a long period of years," and that the oldest inhabitants of the area could not remember anything about its origin. Stick (1958, p. 185) concluded that one or more crews were whaling at Cape Lookout "almost continuously over a period of more than 150 years," which would mean from at least the middle of the 18th century to the end of the 19th. John E. Lewis (1926) stated that there were two generations of shore whalers on Shackleford Banks before Absalom Guthrie's time. Guthrie was born in 1817 and probably began whaling in about 1830 (see below under Catch Levels).

Charts of the Cape Lookout area prepared in 1756 and 1764 show the "Whaler's Hutts" where the village later named Diamond City was situated (Gillikin 1975, p. 73). Carteret County deed books indicate that in 1757 John Shackleford sold two tracts of beach on Shackleford Banks, and with them "liberty to fish and whale" in Point Look Out bay (Notes, D. Stick library, Southern Shores, NC; also see Paul 1967, p. 120-121). In 1764 a British "Act for the encouragement of the whale fishery" was read before the Council in Wilmington (Saunders 1888, p. 1081). A French traveler landing near Cape Lookout in mid March 1765 walked "to where there were some whale fishers tents, and got one of them to Cary us over the [Core] Sound in their boat to Beaufort, a Small village not above 12 houses" (Anonymous 1921, p. 733). During the last four decades of the colonial period (i.e., ca. 1736-76), "whalers' camps were located on the beach west of Cape Lookout

[1]The U.S. Army Signal Corps station at Cape Lookout reported on 23 August 1879 that the Seychelle, a whaling schooner of 50 tons out of Provincetown, Massachusetts, under Capt. Cook, had gone aground within half a mile of the station, "a total loss" (U.S. Army Signal Corps Reports from Cape Lookout, N.C., 1879/80, Southern Historical Collection, Chapel Hill, NC, Accession No. M-3912). Immediately prior to the wreck (which occurred in a hurricane on 18 August), the schooner was "at anchor in the Hook" and had been "fishing in these waters."

Bay" (Paul 1970, p. 385*n*). Salter (1975a, p. 105) claimed "the height of the Colonial whaling era was from 1769-1775," but on what basis is unclear. Several whaleships from Nantucket, loaded with household goods and oil (for bartering), sailed in 1776 for North Carolina, "where a colony of Nantucket Quakers had settled a few years before" (Stackpole 1953, p. 79). This relocation by Nantucket families may have brought more whaling expertise and equipment to the Outer Banks than had been there before.

Even during the War of Independence, whaling seems to have continued. David Wade deserted Captain Enoch Ward's Core Sound militia and "entered with Capt. Pinkum to go a whaling" (Clark 1907, p. 895). The "Whaler's Hutts" supposedly served as a "fake fortification" and deterred the approach of British war vessels in March 1778 (Gillikin 1975, pp. 77-78). In April 1782, shore whalers were active on Shackleford Banks (Kell 1975, p. 21). As evidence that whaling continued during the War of Independence, Salter (1975a, p. 105) noted that William Borden's will provided for payment to a Rhode Island man in compensation for a shipment of whalebone that had been lost, and that David Chadwick's estate included a "whale worp [warp]". After the war, in 1788, Joseph Ward sold to Solomon Chadwick a "parcel" of Banks land "between Drum Inlet and the Middel whale camps" (Notes from Carteret County deed books, D. Stick library, Southern Shores, NC). There are occasional references to oil and whalebone being exported from North Carolina ports in the late 1780s (Table 2). It is not safe to assume that all the quantities of these products exported from North Carolina were from whales caught locally. In some cases the clearances probably represented reexportation of products from elsewhere (e.g., train oil and spermaceti candles from the West Indies; see Crittenden 1936, p. 82).

In 1806, when William Tatham surveyed the coast from Cape Fear to Cape Hatteras, he reported that the people of Beaufort were "partially employed in whaling on Cape Look-out" during winter (Tatham 1806). Tatham implied that the porpoise fishery (see below) was as, or more, important at the time:

[Beaufort's] inhabitants...carry on the Porpoise and other fisheries, jointly with the People of the Straights of Core Sound, at Cape Look-out, where about two hundred barrels of oil were produced last year; so that it is probable that the domestic fisheries will be competent to supply the Light houses, when those of Cape Lookout shall be completed.

In 1810 Thomas Henderson reported from Beaufort (Newsome 1929, p. 399):

Something is done every year in the Whale fishery & much more in that of the Porpoise the oil of which usually sells at forty cents pr. gallon.

In 1839 it was reported that "the porpoise fishing, and now and then a whale, might be carried on to considerable advantage along the North Carolina coast" (*The Corrector*, Sag Harbor, NY, 17[96], 10 April 1839, from the Washington, NC, *Reporter*).

When the estate of Marmaduke Royal was settled in 1839 (he died in 1835), his list of possessions included several "lots" of barrels, a "whale craft," a "whale spade," a "lance," and "1/4 part of Porpois Sein" (Estate listing, NC Dep. Archives Hist., Raleigh). Royal was included in the 1790 census on Shackleford Banks (A. Willis, Morehead City, NC, pers. commun., 10 April 1986). We assume he was whaling at around the turn of the century.

Methods and techniques

During the whaling season on the Outer Banks a constant watch was kept from an elevated position on shore. Elderly men, often former whalers, did the spotting. Boats were launched into the surf when a whale was sighted. At times, "Scouting for whales along the coast was done from a tubby sailing vessel with the pilot boat [see below] in tow" (Salisbury 1954; also see Salter 1975b). A sailing vessel called a "sharpie" occasionally assisted in towing the whale ashore (Paul 1961). On at least one occasion toward the end of the fishery (1916), a gas boat was used to pull the whaleboat near the whale (Morton and Rogers 1984).

The shore whalers on the Outer Banks often did not fasten their whaleboats to the whale with a harpoon and line. A block of wood called a "drug" or drogue (North Carolina whalemen apparently pronounced it as "drudge"—H.O. Phillips, Morehead City, NC, pers. commun., 8 April 1986; Brimley [1894] called it a "drag") (Jones 1861, p.26; Lytle 1984, pp.21-22) was attached to the short (usually about 7-fathom—Brimley 1894; not over 40-fathom—Brimley 1908a) harpoon line (Fig. 4). Once the harpoon was made fast to the whale, this drug was thrown into the water and the whale allowed to swim otherwise untethered (Earll 1887; Clark 1887a, p.49; Lynch 1969). According to Brimley (1908b), the drug functioned mainly as a buoy allowing the whalers to follow the submerged whale's course and anticipate its subsequent surfacings. The drug also may have performed the function of "slightly impeding the whale's progress" (Brimley 1908a).

The Cape Lookout shore whalers did at least occasionally fasten to the whales (e.g., Brimley 1894; Salisbury 1954; Guthrie 1956; Phillips 1980; Engle and Moore 1984), much as other American whalers did after about 1761 (Ashley 1926, p. 93; Edwards and Rattray 1932; Little 1981). Brimley (1908b) referred to a whale struck in 1908 as having "carried the boats out to sea" and finally having been "cut loose." It may be significant that according to oral tradition, no crewman was ever killed by a whale or in a whaling accident during the 150-200 years of the Outer Banks shore fishery (Engle and Moore 1984).

In his 1894 paper Brimley mentioned that some harpoons had a "long warp" or line of 40-50 fathoms, "handled from the boat and kept fast until it has to be cut away or cast off to prevent the boat being pulled under." This long warp also had a drug at the end; the line ran through a hole at one end of the block of wood. Whereas in some other areas a hatchet for cutting the line was standard equipment on a whaleboat (Ansel 1978; Little 1981) (the Long Island whalers used a butcher knife or, in some cases, jackknives—Edwards and Rattray 1932, p. 56), the Carolina shore whalers used another method of releasing the line:

> The harpooner, as soon as the iron is thrown, throws all the warp overboard and then sticks the short end of the block [drag] under the head cap of the boat and holds on to the long end like grim death. Whenever it becomes necessary to cast off he just tips the block over forwards, and the boat is free without any danger of a member of the crew fouling the line, being dragged over with it (Brimley 1894).

In the same article, Brimley observed:

> There is no particular effort made to maintain a constant connection between the whale and the boat until the former is killed and the 'drag' (wooden block)...is usually thrown overboard very soon after the whale is struck.

During the last quarter of the 19th century, the killing was generally accomplished with an explosive cartridge, often in combination with the traditional lance. Brimley (1894) described the

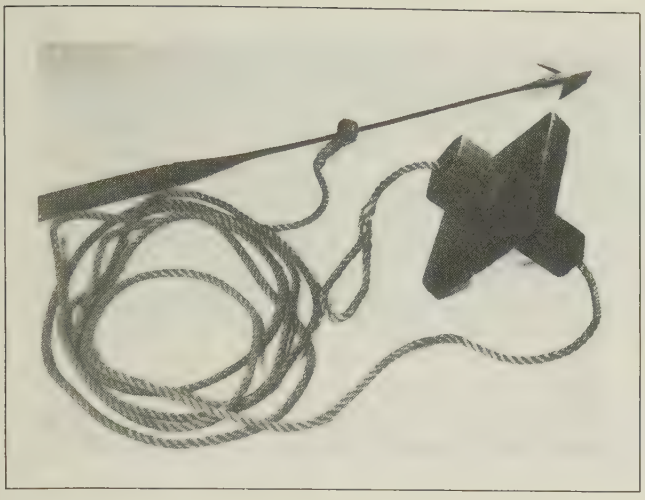

Figure 4

Museum display of a "drug" or drogue used on the Outer Banks in the late 1800s and donated to the museum by whaleman John E. Lewis. It is tied to a relatively small two-flued iron, sometimes called a "log harpoon" (Lytle 1984, p. 22). (NC State Mus. Nat. Sci., Raleigh)

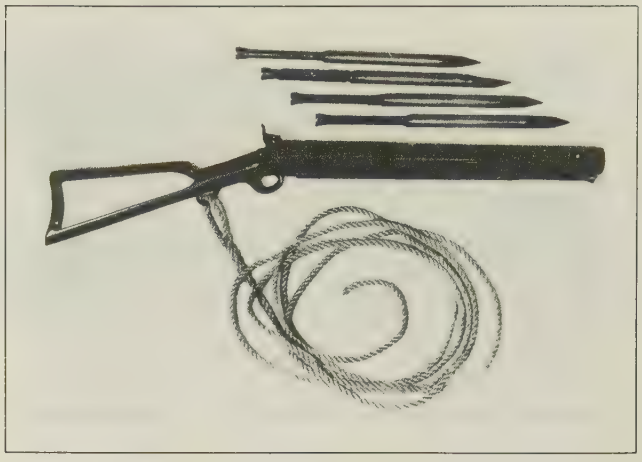

Figure 5

Museum display of the whaling gun and bomb lances used by John E. Lewis on the Outer Banks during the late 1800s. Judging by its similarity to the figure reproduced by Lytle (1984, p. 90) and by its bore (7/8 inch) and weight (19 pounds) (Robert G. Wolk, NC State Mus. Nat. Sci., pers. commun., 7 July 1987), we assume this is a Brand gun, No. 1, which was popular among American whalers after its invention in the middle of the 19th century. (NC State Mus. Nat. Sci., Raleigh)

capture of one large whale that received eight bombs (some of which failed to explode) and several lances and harpoons before succumbing. A smaller whale taken the same season was killed "at the first shot." Another small right whale taken in 1908 was killed with hand lances after the gun, "an old fashioned muzzle-loader," misfired (Brimley 1908a). This whale died within an hour of first being struck; "it was regarded by the fishermen an exceptionally easy kill."

Once secured, the carcass was taken ashore for processing (described by Stick 1958, p. 191-192; Brimley 1894, 1971b, p. 114-115; Engle and Moore 1984). Lines fastened to the carcass were attached to anchors which were buried in the sand above the high-tide level. By this procedure the whalers could take full advantage of the tide in bringing the whale onto the beach. A block and tackle may have been used at times to help drag the carcass above the water line (e.g., Rogers 1983; Salisbury 1954).

According to Clark (1887a), the "whaling gun" was introduced here in 1874 (1875 according to Stick 1958, p. 186) by the crew of the *Daniel Webster*, a Provincetown schooner that made one winter's cruise on the Carolina coast. However, I.E. Moore of Beaufort recalled that his grandfather, Tyree Moore, "purchased the first whaling guns in Baltimore for a sum of two-hundred dollars," and Stacy Guthrie claimed the guns and bombs were home-made (Engle and Moore 1984). Brimley (1908b) described the guns and bombs used at Cape Lookout as follows:

> These guns weigh about eighteen pounds each and have a twenty-inch barrel, with an iron stock.... The bore is about seven eighths of an inch and the load is of black powder, with an eighteen-inch explosive bomb in front of it. This explosive missile has a triangular point, ground very sharp and rubber 'feathers' at the base to keep it end on in its flight. It contains one ounce of powder and has a two-second fuse in its base that is ignited by the discharge of the gun. This gives time for it to penetrate the whale's vitals before exploding.[2]

These specifications for the gun indicate that it was a relatively light 19th-century shoulder gun, and the bombs meet the specifications of a relatively long cartridge used in a "bomb lance" (Lytle 1984; Fig. 5). Misfiring was frequent (Brimley 1908b), forcing the whalers to rely on lances and harpoons to make the kill. A rope was secured to the stock of the gun in order to recover it in the event that the recoil sent the gunner overboard.

The whaling boats, usually called pilot boats by North Carolina watermen, in use during the second half of the 19th century were built of local white spruce, cedar, juniper, or cypress. Their length has been given as about 20 feet (Brimley 1894), 18-21 feet (Anonymous 1981), and 25 feet (Salisbury 1954; Stick 1958, p. 190). These lengths suggest that the North Carolina whaleboats were smaller, on average, than those generally in use in the American whale fishery by the late 1800s but similar in size to those of the 18th and early 19th centuries (Dudley 1725; Ansel 1978, p. 30). Like most early American whaleboats, those from North Carolina were clinker built, i.e. they had lapstrake planking.[3] The last of these boats was on the beach near John E. Lewis's fish house in Morehead City until shortly before 1954 (Salisbury 1954; Fig. 6). They had four, six, or eight oars, plus a steering oar. Crews consisted of six, eight, or ten men, though six appears to have been the usual complement (Fig. 7, inset).

[2]It should be noted that Brimley's (1894) earlier description of these implements differs in some respects. He wrote that the gun weighed "in the neighborhood of fifty [rather than 18] pounds," that the bombs were $1\frac{1}{2}$ (rather than 7/8) inches in diameter, and that the bombs contained a quarter pound (rather than 1 oz.) of powder. He described this gun as a "shoulder piece." I.E. Moore also recalled that the guns weighed 40-50 pounds and "would often knock the gunman backwards into the boat after being fired" (Engle and Moore 1984). Rogers (1983) claimed that a 75-pound gun was fired from the shoulder in killing a whale in 1916. According to Lytle (1984, p. 102) the "heaviest of all shoulder guns" weighed about 34 pounds.

[3]Lapstrake or clinker is a form of planking in which the edge of the plank above laps the edge of the plank below, the two being clench-nailed or riveted together (Ansel 1978, p. 144).

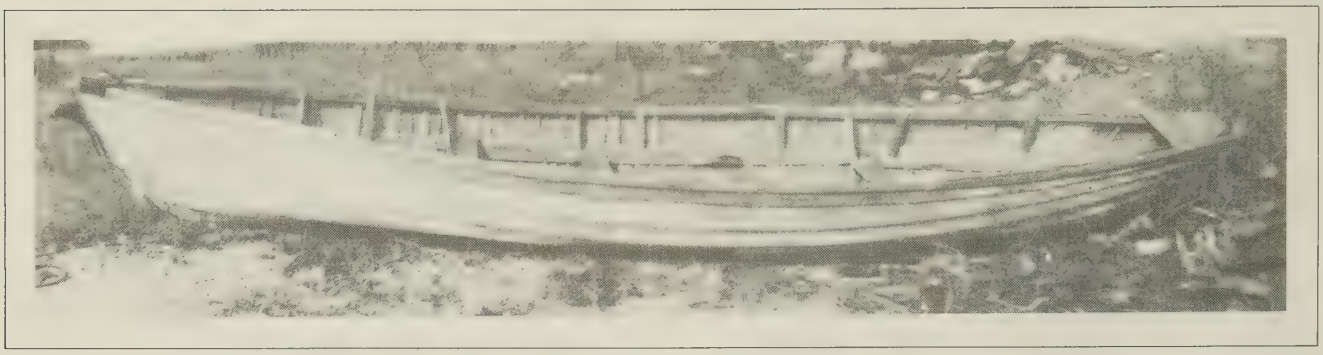

Figure 6

The last Outer Banks whaleboat, which rested on a Morehead City lot until about 1950. It had been used for whaling by John E. Lewis in the late 1800s. (Photo from Mrs. F.C. Salisbury, courtesy NC State Mus. Nat. Sci., Raleigh)

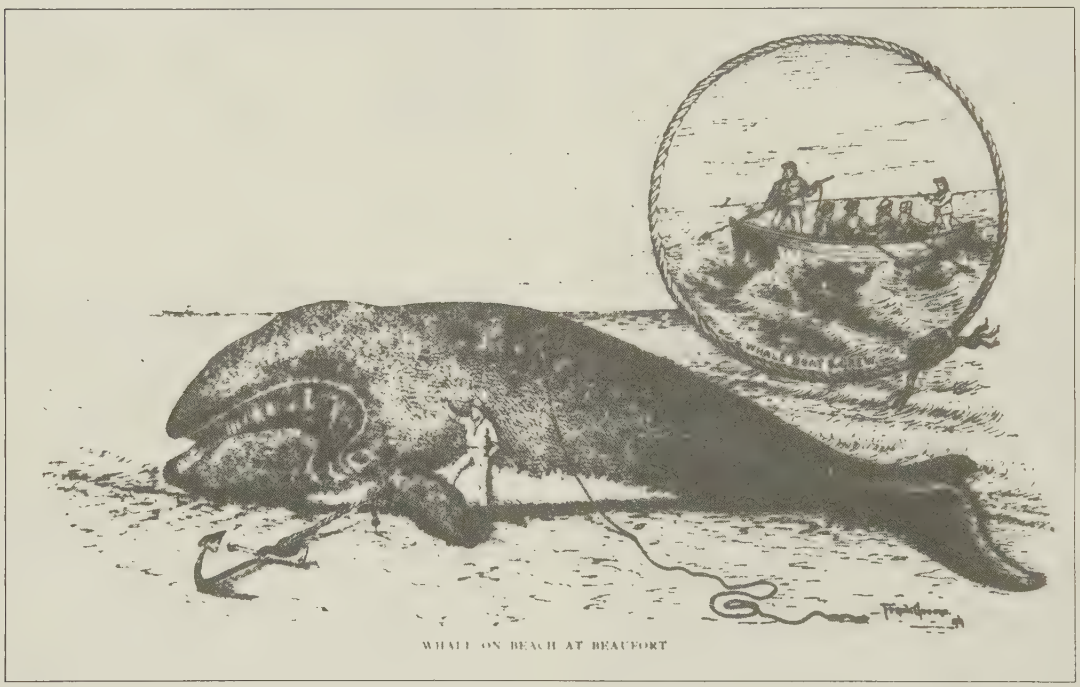

Figure 7

Etching by Frank Greene of a right whale taken at Wade Shore, about halfway between Beaufort Inlet and Cape Lookout, on 20 March 1894 (see Brimley 1894). (NC Dep. Cult. Resour., Div. Archives Hist., Archives Rec. Sect., Raleigh)

There is some confusion about who did what on North Carolina whaleboats. It was standard practice on American whaleboats for the boatsteerer to pull the forward oar until close enough to dart the harpoon (Ansel 1978, p. 26). He would dart the harpoon and get "fast" to the whale, then exchange places with the mate or boatheader (the "captain" in the parlance of North Carolina whalemen). Having steered the boat while approaching the whale, the mate (= captain) would go forward to deliver the fatal blows with the lance or, later, the shoulder gun. According to whaleman John E. Lewis (1926), a six-man crew in North Carolina worked as follows:

> ...four men rowing with the captain in the head [bow] directing and the steersman in the stern taking orders and steering the boat. The captain in the head always shot the guns and threw the lances.

Lewis mentioned no changing of positions. In the event described, Lewis did say that *Captain* Rheuben Willis "was the first to strike him [the whale "Mayflower"—see below] with the shackle iron...." This suggests that the captain remained in the bow throughout the chase, harpooning and lancing the whale himself. Guthrie's (1956) account of the same chase gives a similar impression.

Brimley (1933, 1971b), in quoting Lewis's (1926) letter, changed the wording to say that the captain always shot the guns and "threw the *harpoons* [emphasis added]." However, Brimley (1894) made it clear in his description of a successful chase in 1894 that an exchange took place. The captain pulled the fifth, or bow oar, while the harpooner prepared to dart the whale. Once the harpoon was fast, the captain changed positions with the harpooner and proceeded to make the kill with the gun or lance.

Phillips (1980), who had no first-hand experience of whaling, claimed:

> Six men rode in the boat. Four would row. A man would stand in the head (bow) with the shackle iron and lance and a man in the stern steered. The captain usually steered, and the most dependable man was selected to use the shackle iron.

Although the whalers "fish[ed] with seines for such fish as happen[ed] to be moving along the shore," they did not mix whaling with "porpoise" fishing (Earll 1887, p. 490-1). The seine fishery for bottlenose dolphins (*Tursiops* sp.) (Clark 1887b; Mead 1975) took place along the same stretch of coast during the same time of year as the whale fishery. (Single-day catches of 90-170 porpoises were made at Hatteras in the months of November, January, February, April, and May during the 1880s and 1890s [Rolinson 1845-1905 MS].) The whalers and porpoise fishermen also took marine turtles and large sharks opportunistically (e.g., *The Weekly Record*, Beaufort, NC, 18 May 1888; *The Daily Delta*, New Bern, NC, 7 June 1859).

The distinction between porpoise fishermen and whalers, if it was as clear as Earll claimed, is surprising and important. If whalers regarded whales as the only prey drawing them to the beach in the appropriate season, then it follows that continuity of their fishery demonstrates continued availability of whales. It cannot be argued that the availability of porpoises as an alternative catch allowed the whale fishery to persist past a time when, due to depletion of the whales, whaling alone had become uneconomical. We have no reason for disputing Earll's statement, though reference to a "whale and porpoise factory" in operation at Morehead City in 1888 (*The Weekly Record*, Beaufort, NC, 24 Feb. 1888) suggests that the same merchants were buying both whale and porpoise oil at that time.

Whaling season

The whaling season at Cape Lookout during the 18th century was from late December to April (Saunders 1887, p. 346). During the 1870s the shore whalers apparently began their work in early February, intercepting whales moving northward close to the coast (Earll 1887, p. 490). (Engle and Moore [1984] claimed the people began looking out for whales in late December and early January during the late 1800s.) The season lasted until the first of May, or somewhat longer. It was reported on 17 May 1876 that the Beaufort whalers had "struck their tents for the season" (*The Beaufort Eagle*, 17 May 1876), but effort does seem to have continued well into the month of May that year (*ibid.*, 17 May 1876). There is no reason to believe any factor other than the availability of whales determined the season for prosecuting the fishery. Most of the dated catches and encounters in Table 3 fall within the period February to early May. This is consistent with Kerr's (1875, p. 15*n*) statement that most whales were taken in April and May. Also, Brimley (1894) remarked that the "run" of whales was earlier than usual in 1894, when two had been taken, of six chased, by the 20th of March. Right whales apparently came close to Cape Lookout and Beaufort Inlet only during their spring northward migration, and were "never seen on their return journey to the South in the fall" (Brimley 1894). We can only assume that the whalemen, most of whom were permanent residents on the Outer Banks, looked for whales at all seasons and would have noticed if they came close to the coast during a southward migration.

Grounds

Shore whaling stations (actually "camps") on the Outer Banks were situated between Cape Hatteras and Bear Inlet (Earll 1887, p. 490), or between Cape Lookout and Little River (Clark 1887a, p. 49) (Fig. 8). Holland (1968 p. 15*n*) noted that Little River may have referred to the natural cut formed at high tide between Shackleford Banks and Cape Lookout. This would have placed the camps mentioned by Clark on Core Banks rather than Shackleford Banks. However, Roger L. Payne (Reston, VA, pers. commun., 5 May 1986) assured us that the cut in question, now called Barden Inlet, was formerly called The Haulover or The Drain (also see Schoenbaum 1982, p. 202), but never Little River. In Payne's view, Clark could only have meant Little River, South Carolina, which is just south of the border between the two Carolinas. The evidence of whaling from shore during the 1750s at Lockwood Folly Inlet (discussed above under "Whaling as a Well Established Industry") suggests that whaling camps indeed did exist within about 35 km (to the east) of Little River, South Carolina.

Kerr (1875, p. 15*n*) asserted that the whaling was carried on "chiefly along the Shackleford Banks, between Cape Lookout and Fort Macon." Judging by 18th-century comments (e.g., Saunders 1887, p. 346), known localities of catches made in the 19th century (Table 3), and most other evidence, Cape Lookout was the most important whaling site. The whaling and fishing community on Shackleford Banks, within view of the Cape Lookout lighthouse, became known as Diamond City (Stick 1958). In addition to Diamond City on Shackleford Banks, whaling "was quite an industry off Bogue Banks with the residents of Rice Path [see Tolson 1984] and later Salter Path and also Sheppard's Point and later Morehead City" (Brown 1946). (Also, a "porpoise camp" was established at Rice Path in the 1880s [Stephens 1984, p.33].) Some whaling evidently took place farther north on the Outer Banks as well, contrary to the claim by Dunbar (1958, p. 76) that "there was no whaling on the Banks north of Cape Lookout". In 1839 whales were taken near Portsmouth and near Hatteras (Table 3). Captain Mark Mason of Portsmouth was listed as a whaler by Salter (1975b).

A few place names on the Outer Banks appear to be related to whales or whaling activities. There are two sites named Try Yard Creek, one a short (0.5 km) water passage separating Core Banks from an unnamed marsh island 7 km east of the village of Harkers Island, the other a narrow (0.3 km wide) cove in Pamlico Sound 9.8 km northeast of the village of Ocracoke and 12.2 km southwest of Hatteras Inlet (Payne 1985, p. 188). The etymologies of both names are assumed to involve the former use of these sites for trying out (i.e., rendering oil from) whale (or porpoise?) carcasses. Whalebone Inlet is a former water passage separating The High Hills on Portsmouth Island from Whalebone Island, 7.5 km southwest of the village of Portsmouth and 17.1 km southwest of the village of Ocracoke. This inlet supposedly opened in 1865 and closed in the early 1900s (Payne 1985, p. 193) or 1930s (Schoenbaum 1982, p. 201). According to Salisbury (1965), Whale Camp Point, situated on the north shore of Hog Island, is a site where whales were processed. The carcasses would have been towed through Whalebone Inlet, which was open across Core Banks during at least part of the whaling period. Whale Creek is the name of both a cove and an abandoned settlement site on central Shackleford Banks 4 km south-southwest of the village of Harkers Island (Payne 1985). Since the site was occupied by a small community of whalers, the name presumably relates in some way to their quarry. Whalebone Junction, about 4 km south of the centre of

Table 3

Right whale catch and encounter records from North Carolina, 1839-1916. Individual killed whales often were given names, shown in quotes.

Date	Number[1]	Locality	Size	Sex	Comments	Sources
March 1839	[1]	A few mi S of Portsmouth	60-bbl	–	–	*The Republican*, Washington, NC, 19 March 1839; *Sag Harbor Corrector* 17(96), 10 April 1839
March 1839	[1]	Near Cape Hatteras	60-bbl	–	–	"
8 April 1857	[1]	Near Shackleford Banks	50-bbl	–	60-70 ft long, very fat, expected to be worth $1000; taken by Samuel Moore and Absalom Guthrie.	*Beaufort Journal*, 9 April 1857, *fide* Salisbury 1954
May 1869[2]	1	Off Shackleford Banks	45 ft.	–	–	Coues 1871; Simpson and Simpson 1988
4-5 May 1874	1	Cape Lookout	Large	–	"Hain't Bin Named Yit"; 25 bbls, 450 lbs bone.	Guthrie 1956
4-5 May 1874	1	Cape Lookout [off Rice and Salter Path village]	Large	–	"Lady Hayes"; 35 bbls, 650 lbs bone.	Guthrie 1956; Brown 1946
4 May 1874	1	Cape Lookout	±50 ft	M	Skeleton in state museum, Raleigh; "Mayflower"; taken by "Red Oar Crew"; 40 bbls, 700 lbs bone.	True 1904 (p. 246); C.S. Brimley 1946 (p. 7); H.H. Brimley 1971b (p. 110-111); Guthrie 1956; Lewis 1926
4-5 May 1874	0	Cape Lookout			A right whale, probably struck, was "lost after a long and rugged chase" by Sam Windsor's crew.	Guthrie 1956
Late April or early May 1876	1	Cape Lookout	Large	–	Supposedly 72 ft long; "whalebone" and oil sold for $1,664. (The whale taken on 4 May by the Cornell Crew of Harkers Island may or may not have been this whale.)	*The Beaufort Eagle*, 17 May 1876
12 March 1878	[1]	Morehead City [probably Cape Lookout]	42 ft	–	"Extremely fat"; worth ca $900.	*The Observer*, Raleigh, 16 March 1878; *Whalemen's Shipping List* 36(6), 26 March 1878
1879	[5]	Beaufort region [probably Cape Lookout]	–	-	Worth $4000; 4 crews, 72 men.	Earll 1887 (p. 490); Clark 1887a (p. 49)
1880	1	Between Cape Hatteras & Bear Inlet	Small		Baleen and oil worth $408; 6 crews, 108 men.	Earll 1887 (p. 490); Clark 1887a (p. 49)
February 1888	1	Cape Lookout	"Medium"; 37 ft	–	By Tyre Moore's crew; worth $1,500.	*The Weekly Record*, Beaufort, 17 Feb. 1888
(ca. 1888)[3]	1	Cape Lookout	Large	–	Mart Willis, harpooner; 52 casks of oil; "Little Children."	Brown 1946
ca. 15 February-15 March 1894	0	Cape Lookout	–	–	Several "unsuccessfully chased."	Brimley 1971b (p. 113)

[1]Brackets around number indicate that, although the whales were most likely right whales, their identity could not be confirmed (or inferred, e.g., from product descriptions).

[2]This whale may have been taken in mid-April instead, or it may have been one of at least two taken at Shackleford Banks this season; see Simpson and Simpson 1988.

[3]The whale "Little Children" is said to have been taken when Stacy Guthrie was "about five years old" (Engle and Moore 1984). Since Guthrie was born in December 1882 (Tolson 1984), we assume the "Little Children" was killed in about 1888.

Table 3 (continued)

Right whale catch and encounter records from North Carolina, 1839-1916. Individual killed whales often were given names, shown in quotes.

Date	Number[1]	Locality	Size	Sex	Comments	Sources
18 or 19 March 1894	1	Cape Lookout	~30 ft	M	25 bbls; 156½ lbs baleen; worth $451.60; "Lee."	True 1904 (p. 246); Brimley 1971b (p. 113), 1894, 1908a, b, 1933
20 March 1894	1	Cape Lookout; off Wade Shore, ca. 4 mi E of Beaufort Inlet	53 ft	F	39 bbls, 864 lbs baleen; worth $1900; 5 boats.	True 1904 (p. 246); Brimley 1971b (p. 112), 1894; Figure 7
1897	1	Cape Lookout	Large	–	"Mary Queen."	Brown 1946
15 February 1898	1	Cape Lookout	~46 ft	F	Maximum baleen length 6 ft 4 in; ~650 lbs baleen; 27 bbls oil saved (ca. half of "possible output"); skeleton in natural history museum, University of Iowa; probably the whale "Mullet Pond."	Brimley and Brimley n.d.; True 1904 (p. 246); Brimley 1971a (p. 107), 1971b (p. 112); Thomson 1987; Figure 10
18 February 1898	1	Cape Lookout	Large	–		Simpson and Simpson 1988
3 April 1898	1	Cape Lookout	Large	F	Accompanied by a calf, which was harpooned but not taken; 3 boats; valued at ca. $1000.	Paul 1961; Paul and Paul 1975
April 1908	1	Cape Lookout	43 ft	–	"Tom Martin"; 45 barrels.	Seymour 1984
17 May 1908	1	Cape Lookout	Small; 39 ft	M	Towed to Beaufort and put on exhibit; oil not saved, but baleen saved (3 ft long, 300 lbs); "Big Sunday."	Brimley 1908a, b
April or May 1908	0	Cape Lookout	–	–	"Harpooned and fastened. . .but he carried the boats out to sea and was finally cut loose."	Brimley 1908a, b
1909	[1]	Cape Lookout	–	–	–	Stick 1958 (p. 194)
16 March 1916	1	Cape Lookout	57 ft	–	30 barrels oil from body, 3 from "jaw," 5 from "liver"; taken by 1 boat crew.	Rogers 1983; Morton and Rogers 1984; Stapleton 1984

Nags Head in Dare County, got its name from a skeleton of a stranded whale displayed during the 1930s by the owner of a service station (*ibid.*, p. 193). Thus, it should not be taken to suggest that whaling was conducted in this part of the Outer Banks. The same can be said of Whale Head Bay and Whale Head Hill in Currituck County. It has been suggested that these names refer to the shapes of the dunes in the area and thus have no particular significance to the history of whaling (*ibid.*, p. 194). A plantation at Currituck owned by Richard Etheridge during the first half of the 18th century was "commonly known by the name of Whale House" (Grimes 1910, p. 114), but we do not know the significance of this name.

Payne (1985, p. 49) gave the name "Cape Lookout Grounds" to "an area of open sea that is east and south of Cape Lookout at approximately 34°34′30″N, 76°25′30″W." He noted that this area was used extensively by shore-based whalers through the end of the 19th century. Payne (Reston, VA, pers. commun., 5 May 1986) apparently coined the name of this whaling ground, inspired by Stick's (1958, p. 185 *et seq*.) reference to "the Cape Lookout grounds." We have found no evidence that New England whalers applied a name to this ground, as they did to many of the other whaling grounds around the world. Our own appellation—Southeast U.S. Coast Ground—is viewed as encompassing Payne's Cape Lookout Ground as well as the coastal waters of South Carolina, Georgia, and northeastern Florida where American whaling vessels cruised for right whales in winter. This relatively minor part of the American whale fishery apparently involved no more than about 10 New England schooners. Less than 20 cruises are documented, with a known kill of 19 right whales between 1876 and 1882 (Reeves and Mitchell 1986b).

Figure 8
Coast of North Carolina, showing place names mentioned in text. (Prepared by Francoise Cartier)

The schooner *E.H. Hatfield* of Edgartown, Massachusetts, cruised for right whales in early 1881 along the North Carolina coast (Logbook of *E.H. Hatfield*, 15 June 1880-19 Aug. 1882, Public Library, Providence, RI). She anchored at Morehead City on 5 February and sailed again 16 February, "steered down the coast to the southward looking for Right Whales." In company with the schooner *Emma Jane* of Edgartown, the *Hatfield* continued cruising "outside the bar" near Fort Macon through the rest of February. She called at Fort Caswell on 26 February and cruised within a couple miles of shore near Cape Fear through March and April. The only whale sighting reported in the logbook was a "finback" seen 18 February near Fort Macon. The *Hatfield* did not finally depart the region until 17 May when she left Fort Macon and headed for Bermuda.

Species composition

There is no doubt that the principal target of the shore fishery on the Outer Banks was the right whale (Kerr 1875, p. 15*n*; Brimley 1894). "The only species sought was the Right Whale" (Brimley 1971a, p. 107). "...for all practical purposes, when we speak of whales on this coast we refer to the black [right] whale" (Brimley 1908b). Oil and baleen were the fishery's chief products. The latter would have been valued only if it came from right whales.

The season for the fishery also suggests that it was mainly for right whales. Right whales are present today off the Carolinas principally from December through April (Reeves et al. 1978; Mead 1986; Winn et al. 1986), coincident with the timing of the whaling. It is also significant that pelagic whalers who cruised nearshore south to Fernandina, Florida, during 1875-82 took only right whales, though they saw "finbacks" (*Balaenoptera* sp.) occasionally (Reeves and Mitchell 1986b).

Sperm whales would have been desired, but it seems unlikely that many would have been sighted from shore, given the present-day distribution off this coast plotted by Winn (1982). Also, the pelagic whalers hunted sperm whales mainly on the Southern Ground (33°-40°, 60°-75°W) and Charleston or Hatteras Ground (28°-33°N, 67°-78°W) during April to September (or to January on the Charleston Ground) (Townsend 1935, p. 12), making the sperm whale fishery largely out of phase with the Carolina shore fishery. The sperm whaling grounds were along and seaward of the edge of the Continental Shelf, and thus well beyond the range of shore-based observers. Ambergris, a product obtained from sperm whales, is mentioned in the Fundamental Constitutions of Carolina (Saunders 1886a, p. 205; also see Cain 1984, p. 457, 528). However, the implication is that ambergris was not a product of the early colonial whale fishery but rather a substance found fortuitously—floating or washed ashore. Lawson (1966, p. 153), writing in 1709, recognized the commercial value of the "Sperma Ceti Whale" but had heard of only one of these whales coming ashore on the Outer Banks, at Currituck Inlet. Lawson's descriptions of mysticetes (and for that matter other odontocetes) are unfortunately muddled, and it is impossible to decide which species commonly stranded on the Outer Banks during the early eighteenth century. There is one unequivocal statement attesting to the capture of sperm whales by the Shackleford Banks whalers: "On one occasion, two sperm whales were taken, one of which measured 62 feet in length" (Kerr 1875, p. 15*n*). Kerr nevertheless believed that "the common right whales were the ones normally hunted." According to Brimley (1908b) "An occasional sperm whale has been seen off our coasts."

The "finback," presumably *B. physalus* in most instances, was described by Brimley (1971a, p. 103; 1971b, p. 110) as the only whale other than the right whale that was "at all common" on the Carolina coast. Strandings of this species on the Outer Banks are relatively frequent (Fig. 9). Notes by Brimley (1926) from his conversation with a whaler indicate: "Finbacks plentiful but never molested."

Another possible target would have been the humpback. Coues (1871) was told by the Shackleford Banks whalers during the late 1860s that they occasionally caught humpbacks (M. B. Simpson, Jr., Columbia, MD, pers. commun., 4 Aug. 1987)[4]. However, the

[4]After our study was completed in spring of 1987, we learned of a parallel study by Marcus B. Simpson, Jr., covering many of the same historical sources as we had used. We exchanged manuscripts with Simpson, whose article on North Carolina whaling is scheduled for publication in *The North Carolina Historical Review* (see Citations), and agreed to share information.

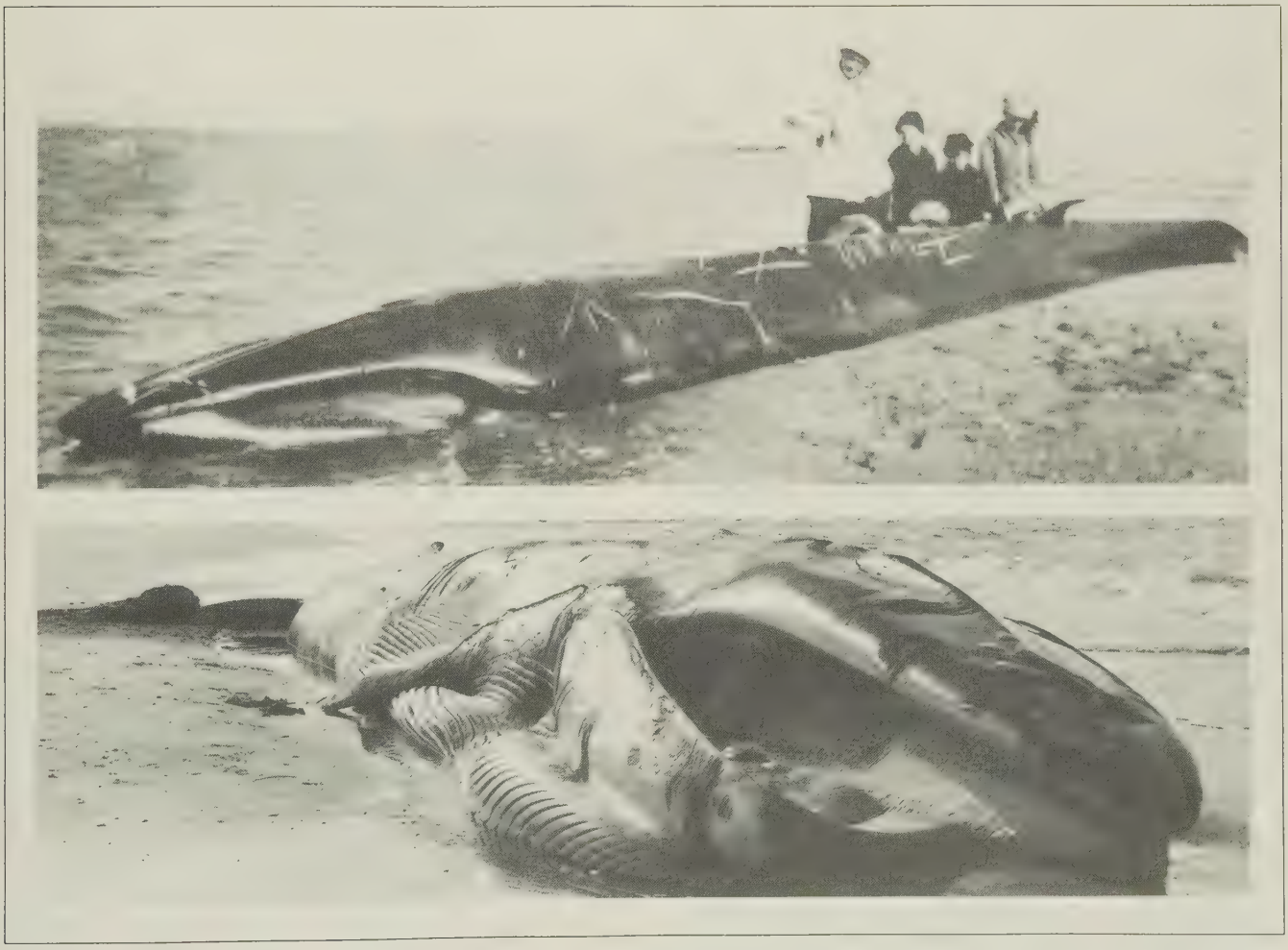

Figure 9

(Upper) A finner whale (*Balaenoptera* sp.) stranded at Cape Lookout in about 1918. Based on the characters shown in this photograph, we would guess that the whale was most likely a young finback (*B. physalus*). (C. J. Josenhaus via Mrs. L.C. Davis, courtesy Connie Mason); (Lower) A fin whale stranded near Cape Lookout in late May or early June 1968 (Reg. Lewis, courtesy Alida Willis).

humpback's annual migration between the West Indies and New England appears not to follow the Carolina coast closely (Winn 1982). A man who recalled conversations with people directly involved in whaling stated: "The men of Shackleford generally only killed the Right whale. They didn't bother with the humpback or sperm whales because they were scared of them" (Phillips 1980; also H.O. Phillips, Morehead City, NC, pers. commun., 8 April 1986). One old whaler supposedly recalled that "Right whales, hump backs and fin backs were the most common whales sighted" (Engle and Moore 1984). A small (21 feet 2 inches) humpback stranded alive on the inside coast of Shackleford Banks in May 1955 (*Carteret County News-Times,* 10 May 1955).

In May 1876 an "enormous Blackfish," supposedly 27 feet long, was found on the beach 6 miles north of Cape Lookout. It was tried out, producing four barrels of high-quality oil which sold for 55 cents per gallon (*The Beaufort Eagle*, 17 May 1876). Blackfish or pilot whales, *Globicephala* sp., were taken occasionally on the Outer Banks (Brimley 1908b; Brown 1931; *The News and Observer,* Raleigh, 10 Oct. 1954; Seymour 1984), but we have no definite evidence (see Davis et al. 1982, p. 37) that they were driven ashore regularly here in large schools as they were at Cape Cod and Nantucket during the 18th and 19th centuries (e.g., Freeman 1862, p. 655; Clark 1887b; Smith 1922, p. 87-88; Little 1981).

Gray whales, *Eschrichtius robustus*, now extinct in the North Atlantic, probably occurred off North Carolina in colonial times (Mead and Mitchell 1984) and thus may have been included occasionally in the catches. Brimley's (1894) reference to the scrag whale, *Agaphelus gibbosus*, as having been "found on this coast" probably came from statements in the literature rather than from first-hand observation (also see True 1885)[5]; however, Coues (1871) was told that "scrag" whales were taken occasionally (M. B. Simpson, Jr., Columbia, MD, pers. commun., 4 Aug. 1987).

We found no references to killer whales, *Orcinus orca*, in the records of the North Carolina whaling industry, though the species certainly is known from that coast (e.g., Brimley 1894; Reeves 1976). The nearest record of a blue whale is a stranding at Ocean City, New Jersey (True 1904). A sei whale that stranded alive at Eastham, Massachusetts, in July 1974 was towed to sea and released, only to be found washed ashore dead in April 1975 near Corolla, NC (Mead 1977; *The News and Observer,* Raleigh, 1 May 1975).[6] Mead (1977) postulated a winter southward migration by sei whales from New England to South Carolina. The Bryde's whale, a tropical mysticete often confused with the sei whale because of their morphological similarity, has not been reported in North Carolina waters, but its occurrence as far north as Chesapeake Bay (Mead 1977) suggests that it is present at least occasionally off the Carolinas.

Pod characteristics

An interesting aspect of the North Carolina right whale fishery, which we cannot evaluate from available evidence, is the claim that the whales commonly appeared off Cape Lookout in groups of three—supposedly a bull, a cow, and a calf or yearling (e.g., Engle and Moore 1984). In no instance of which we are aware were all three whales in such a group taken, and then reliably sexed. However, Brimley (1894), a normally skeptical naturalist and reliable reporter, seems to have accepted the whalemen's word on this question. Thus, in his description of the capture of the large female on 20 March 1894, he mentioned that she was a member of such a threesome and that, while all three were chased, the bull and yearling escaped "out to sea, fighting-mad, and thrashing angrily around." Brimley also noted that female right whales often were encountered along the North Carolina coast accompanied by very young sucklings. The practice, common among whalemen, of striking but not necessarily killing the calf to make the mother easier to approach, was mentioned by Brimley and others (e.g., Paul 1961; Engle and Moore 1984) as characteristic of the North Carolina fishery. Whaleman Stacy Guthrie was quoted as follows (Lynch 1969):

> There would be a bull, a cow and a calf. We'd fasten an iron in the calf. Wouldn't put the iron in enough to kill the calf if we could help it. Just enough to hold it. If you killed the calf the cow would leave. But she'd never leave as long as the calf lived.

The unsubstantiated claim concerning bull-cow-young combinations is one which we might have disregarded were it not for our analogous experience with humpbacks (Mitchell and Reeves 1983). Historical accounts of whaling in the West Indies, on the winter grounds of western North Atlantic humpbacks, frequently refer to groups consisting of a bull, cow, and young (e.g., Archer 1881; Fenger 1913). By these accounts, like those from North Carolina, the supposed adult male usually escaped but the adult female, encumbered by her devotion to the calf, was at least struck if not actually taken. We were skeptical of the whalemen's assumption that the mother's adult companion was a male. However, recent field studies of humpbacks in Hawaii have confirmed that "escorts" accompanying mother-calf pairs are almost always males (Glockner 1983; Baker and Herman 1984). Studies of right whales on their wintering grounds in the Southern Hemisphere have found no evidence that mothers and calves are closely associated with a second adult (Best 1981; Taber and Thomas 1982; Payne and Dorsey 1983). In fact, mother-calf pairs tend to dissociate from other adults. Right whales were, according to the whalemen, on migration when encountered off North Carolina (Brimley 1894), so the analogy with humpbacks on their wintering grounds is not necessarily appropriate. We conclude that, even with the scientific evidence that right whales and humpbacks differ in their social behavior on the wintering grounds, the North Carolina whalemen's claim that bull-cow-young combinations of right whales were a typical grouping during the migration along that coast cannot be dismissed.

[5]The identity of Dudley's (1725) scrag whale has commanded the interest of cetologists for many years. It has been taken by some to be an emaciated right whale (Allen 1869, p. 203) but is more likely the gray whale (see Mead and Mitchell [1984] for a recent review of this question).

[6]This individual had a notch in its dorsal fin which, together with the 10-m length of nylon rope still tied round its tail after being cut free from the Coast Guard vessel, allowed it to be reidentified.

Naming of individual whales

The Outer Banks shore whalers, at least during the second half of the 19th century, were in the habit of giving names to the right whales they caught. This practice is reminiscent of that followed by aboriginal whalers in Chukotka, USSR, who gave names to the bowhead whales they killed (Krupnik 1987). We have found the names given whales in North Carolina to be useful in some instances and confusing in others. On the one hand, the name functions as a kind of "marker" in trying to sort through disparate accounts for information about a specific whale. On the other hand, certain whales, apparently in part because of the interesting stories connoted by the names, have been mentioned repeatedly in newspaper and magazine articles, some of which are uncritical and probably at least partially invented. The whales "Little Children" and "Mayflower" are the readiest examples. The former was so named because it was taken by a crew of inexperienced boys who happened to be present when the whale was sighted (Engle and Moore 1984). Regular crews of men supposedly were otherwise occupied at the time. The "Mayflower" was so named because it was taken on the 4th of May.

We tried to track problematic whales and to resolve any inconsistencies by reference, whenever possible, to authoritative sources. However, in some cases even the usually reliable "authorities" failed us. Brimley (1908a, b) claimed the large female taken in March 1894 was the "Little Children," but his own account of the capture published in 1894 is inconsistent with the story behind the naming of the "Little Children." The large 1894 female was chased by at least four or five boats, crewed by experienced hands (Brimley 1894); whereas the "Little Children" was so named because this whale was taken by a crew of boys at a time when the experienced crews were unavailable. If, as Engle and Moore (1984) claimed, the "Little Children" was caught when Stacy Guthrie was about five years old, then this whale was taken in about 1888 (Guthrie was born in December 1882; Tolson 1984).

Effort

We have no way of assessing "fishing effort" quantitatively before the last third of the 19th century. Beginning in the 1870s, there is some record of the number of boat crews involved (Table 4). According to Guthrie (1956), the North Carolina whale fishery was at its peak in 1865. However, Earll (1887, p. 490) and Clark (1887a, p. 49) implied that whaling effort increased on the Outer Banks beginning about 1879. From two or three camps involving 36 to 54 men (Earll described a typical camp as consisting of three six-man crews), the numbers grew to four camps and 72 men in 1879, then 108 men in 1880. At six men per boat, this suggests the potential for 12 to 18 boat crews involved in the fishery in 1879 and 1880, respectively. In 1874, six boats were involved in the capture of the whale "Mayflower" according to Lewis (1926). According to another account (Guthrie 1956), the "Mayflower" was taken by the "Red Oar Crew" of Josephus Willis and his sons, working alone, while four other crews chased other members of the group of whales sighted that day. Toward the end of John E. Lewis's generation (ca. the 1880s) the whalemen in the Cape Lookout region "amalgamated" into a single group consisting of six crews. Lewis (1926) claimed these were the only whalers in North Carolina at the time.

Probably referring to the period ca. 1880-1900, Brimley (1971b, p. 109) estimated that only about six fully equipped whaling boats were "kept in readiness" in the region of Cape Lookout and Beaufort Inlet (four boats according to Stacy Guthrie; Engle and Moore 1984). In 1894, four or five boats and crews could be mustered at the west end of Shackleford Banks, one or more at Cape Lookout, and one or more at Morehead City (Brimley 1894). In one capture that year, four Cape Lookout boats and one Morehead City boat participated. The whale fishery was vigorously pursued at this time:

> On the spring migration northwards the whales come inshore below Cape Lookout, and during this season the whale boats are always kept in readiness along the beach, above high-water mark, ready to be run into the water as soon as a 'fish' is sighted (Brimley 1894).

There is much confusion about the end of whaling on the Outer Banks. A whale taken at Cape Lookout on 3 April 1898 was described as "the last whale killed along these shores" (Paul 1960; Paul and Paul 1975, p. 10), but it actually was not. By 1898 the whale fishery on the Outer Banks was certainly in decline, but a letter dated 9 February 1899 from H.H. Brimley to J.H. Potter, the Beaufort fish dealer who supplied the skeleton of the 15 February 1898 specimen (Table 3; Fig. 10), refers to "that whale that is going to be caught this spring" (Brimley 1899). Brimley was eager to secure another complete skeleton, and Potter seems to have assured him that the whaling crews would be active again in the spring of 1899. Incidentally, Brimley's intention clearly was to sell the specimen, as he had done in 1898 (to the University of Iowa; see Thomson 1987). John E. Lewis (1926) said that the whaling industry "declined about twenty-five years ago," i.e., about 1901. The hurricane of 1899 drove virtually all the permanent residents of Shackleford Banks, including the remaining whalers, off the island (Gillikin 1975, p. 91; Stick 1958). They resettled mainly at Harkers Island, Beaufort, Morehead City (in the Promised Land section of town), and Salter Path on Bogue Banks. Thus, after the turn of the century, whaling became a less regular or systematic enterprise.

Captain Gib Willis helped kill a whale in 1908 which he called "the last whale that was ever processed in this county [Carteret]" (Seymour 1984). That whaling was by this time desultory is suggested by the fact that Willis "was not a whaler but a fisherman." He is quoted as having said, "We had a chance to kill one [whale] and we couldn't turn it down" (Seymour 1984). In 1908 it appears that two whales were taken and another struck but lost (Table 3).

Table 4
"Fishing effort" in North Carolina shore whaling.

Period	Crews whaling (= boats)	Source
1870s	6-9	Earll 1887; Clark 1887a
(1874)	(Min. 5-6)	Lewis 1926; Guthrie 1956
1879	12	Earll 1887; Clark 1887a
1880	18	Earll 1887; Clark 1887a
1880s-1900	6	Lewis 1926; Brimley 1971b
(1894)	(Min. 5, possibly 7 or more)	Brimley 1894
1908	1-2	Brimley 1908b
1916-1917	1	Rogers 1983; Davis et al. 1982

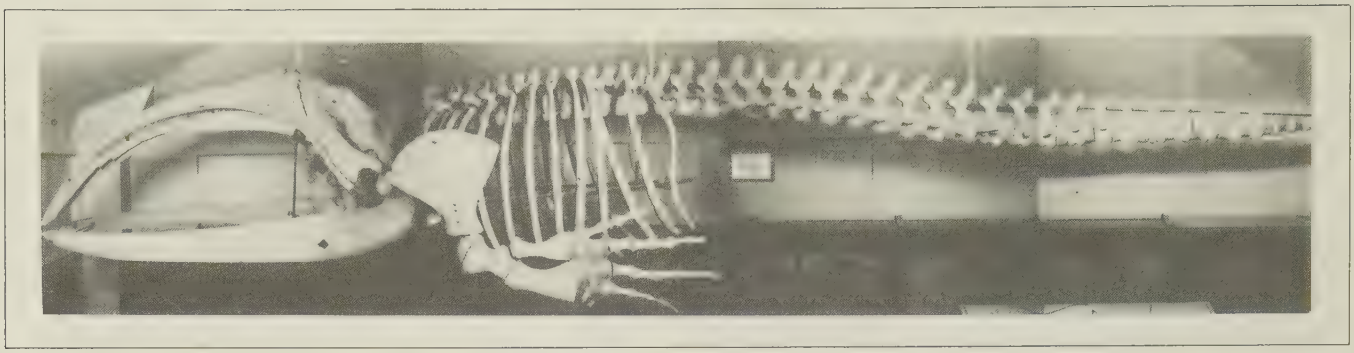

Figure 10

Skeleton of a female right whale taken at Cape Lookout, 15 February 1898, on display at Museum of Natural History, Univ. Iowa, Iowa City. Note that four more vertebrae are present in the caudal region beyond the right edge of the photograph. (Courtesy Dr. George Schrimper, Museum Director)

Nevertheless, according to Brimley (1908b) no try-pots or cutting spades were available at Cape Lookout at the time, and no one on the banks pursued whaling as a "regular" occupation. Only one or two whaleboats were kept ready during the season, "in case of need." Allen (1908, p. 314) stated that right whales were still being caught by shore whalers during the first decade of the 20th century, "particularly from the southern side of Long Island and on the coast of North Carolina, one or two, and sometimes more, being taken in a single season, but usually only at intervals of several years."

Stick (1958, p. 194), a generally reliable source, indicated that the last whale was taken in North Carolina in 1909. However, a right whale was taken at Cape Lookout in 1916 (Rogers 1983). It apparently was chased by a single boat, manned principally by men of the Rose family of Harkers Island. A "gas boat" was used to tow the 22-foot double-ended whale boat to within attack range of the whale. According to Charlie Rose, who piloted the gas boat during the chase: "This was whaling country in those days. We didn't kill many, but..." (Rogers 1983; Stapleton 1984; Morton and Rogers 1984).

According to Davis et al. (1982, p. 37): "The last [whaling] crew was disbanded in 1917 when a fire destroyed most of their gear."

Product yields

Engle and Moore (1984) claimed that the average yield of oil from whales taken near Cape Lookout was 40 barrels. Reported yields from individual whales generally were less than 40 barrels (Table 3), so the use of 40 barrels per whale to estimate the catch from oil production data would be a conservative procedure (i.e., cause a tendency to underestimate the number of whales caught). The female taken on 20 March 1894 was considered exceptionally large but produced only 39 barrels of oil (Brimley 1894). This is in spite of the fact that the carcass was apparently processed efficiently, the tongue producing six barrels and the "refuse" three. According to Brimley, the shore whalers routinely tried out the skin and blubber, the tongue, the lips and tail flukes, "and with them any fat they can get from the inside of the body cavity." There is no suggestion that the 20 March 1894 whale was a "dryskin," i.e., a female whose lipid stores had been depleted after a period of lactation. A dryskin "won't yield more than thirty Barrels of Oil, tho' of large Bulk" (Dudley 1725). In the literature from the North Carolina fishery we did not encounter the term "dryskin" or an equivalent. This is in contrast to the Long Island and Massachusetts fisheries in which the term "dryskin" was often used (Dudley, 1725; Little 1981; Reeves and Mitchell 1986a).

Brimley (1894; also see 1908a) made the interesting observation that among right whales: "The white-bellied whales yield the most oil and they usually have a patch of white on the tip of each fluke, so that if only the flukes are seen as the whale goes down the fishermen can often tell whether or not it is a white-belly that they are pursuing." The large 20 March 1894 female was "white-bellied" (True 1904, p. 250; Fig. 7). The Long Island shore whalers called those right whales with white throats "necktie" whales, and they considered these individuals especially "lively," i.e., difficult to catch (Edwards and Rattray 1932, p. 84, 111). Captain J.B. Edwards of Amagansett reported having seen off Long Island some right whales "with the breast and throat nearly all white" (Andrews 1908).

Brimley (1894) also noted that the males were more slender than the females and generally yielded somewhat less oil. A 39-foot male taken in 1908 was completely black and proved to be "quite poor" in oil, with blubber only about 4 inches thick where the harpoon had entered (Brimley 1908b). The whalers told Brimley that "young bulls" such as this one were "usually in poor condition." Stacy Guthrie claimed that the North Carolina whalers made little effort to kill "bulls" because they were difficult to capture and produced little oil (Lynch 1969).

Yields of baleen generally were well below 1,000 pounds (Table 3). The large female referred to above had baleen 7 1/2 feet long, close to the maximum length for right whales (Dudley 1725), but produced only 864 pounds (Brimley 1894). Dudley (1725) indicated: "A good large Whale has yielded a thousand Weight of Bone." North Carolina whaler Stacy Guthrie claimed: "There would be 1,000 pounds of bone in the mouth of a good Wright whale" (Lynch 1969). A factor to bear in mind in interpreting data on baleen production is that weight varies greatly according to the condition of the baleen, i.e., whether it has been cleaned, scraped, and dried before weighing. For example, the baleen of the young male taken in 1908 weighed about 300 pounds in "the rough, green and uncleaned" state; the owners expected the cleaned, dry baleen to weigh no more than 150 pounds (Brimley 1908a, b).

Catch levels

If all 510 barrels of whale oil shipped to Boston from North Carolina in May 1719 (Cain 1981, p. xxii; *in litt.*, 16 June 1986) was from right whales, it would represent, at 40 barrels per whale, a catch of about 13 whales that season. Captain John Records and the other whalers working along the "Sea Coast of port Beaufort" during the early 1720s took enough whales to produce 60 barrels of oil and 8 hundred weight of bone as their one-tenth duty (Vice-Admiralty Papers, Vol. I, fo. 28, State Archives, Raleigh, NC). At 40 barrels per whale (and assuming 600 barrels were produced), this suggests a catch of approximately 15 right whales in one year. The "tenths reserved upon the whale fishery in North Carolina" from about 1725 to 1728 were valued at £800 sterling (Saunders 1886b, p. 722; Headlam 1937, p. 71). Whale oil in North Carolina was valued at £2:10:0 per barrel in 1729 (Cain 1981, p. xxviii). If all £800 was from whale oil, it would represent 320 barrels produced, or approximately 8 right whales caught over the three- or four-year period. However, some of the £800 would have represented whalebone production, so the estimated catch would be less than eight, perhaps five or six whales. Josiah Doty's catch in 1727 produced 300 barrels of oil (Stick 1958, p. 34), equivalent to about eight right whales at 40 barrels per whale. "Capt. John Records and Company" produced 670 barrels of oil in two years (ca. 1728-1729) (Vice-Admiralty Papers, Vol. I, fo. 22, State Archives, Raleigh, NC). Some "bone" (baleen) was also secured by these whalers, but the portion of the page showing the amount has been torn away from the document in the state archives. The 670 barrels of oil implies a two-year catch of about 17 right whales, assuming 40 barrels per whale. The single-season production of 340 barrels by two boats working out of Ocracoke Island before 1730 (Brickell 1968, p. 220) would have required a catch of eight or nine right whales, at 40 barrels per whale. Between 5 January 1768 and 5 January 1769, the port of Beaufort exported 1,126 gallons of oil and 150 pounds of "Whale Bone" to Great Britain (Salter 1975a, p. 107). If this is all that was produced by the whalers in 1768, they may have taken only one whale that season.

In addition to the whales whose captures are documented in Table 3, there is less detailed documentation for many others. John E. Lewis (1926), a former whaler from Morehead City, reported to H.H. Brimley in 1926 that a particular crew member (Absalom Guthrie) and captain (James Lewis) had helped kill 52 [right] whales "during his [Guthrie's] generation." John Lewis had helped kill ten other whales "since that time, during his [John Lewis's] generation" (Lewis 1926). According to Seymour (1984) and Engle and Moore (1984), Josephus S. Willis also "helped kill 52 whales". To get some idea of when these whales were taken, we checked the birth, death, and other significant dates for these men.

John E. Lewis was born in 1859 and died in 1942 (Guthrie 1982). He moved from Shackleford Banks to Morehead City in 1887. Willis was born around 1830 and died in 1881 (Davis et al. 1982, p. 497). Mary Guthrie Austin's (Beaufort, NC, pers. commun., 10 April 1986) unpublished family genealogy indicates that Guthrie was born in 1817 and married in 1853. He died in 1888 (A. Willis, Morehead City, NC, pers. commun., 10 April 1986). During the census of 1870, Guthrie (then 54) and James Lewis (38 years old, with son John listed as 10) were living next door to each other on Shackleford Banks. Guthrie certainly was still whaling in 1857, when he and Samuel Moore took a large whale (Table 3). He was still living on Shackleford Banks with his wife and family during the 1880 census, though his age was given then as 64 years. James Lewis, age 50, was still there as well. According to the family bible, James Lewis was born on the Banks in 1830 and died in Morehead City in 1894 (A. Willis, Morehead City, NC, pers. commun., 10 April 1986). One further fact is that according to Guthrie (1956), the whale "Mayflower" was taken in 1874 by Josephus Willis and his sons, the "Red Oar Crew." The pod of whales chased on this occasion was sighted by Absalom Guthrie, who had "killed fifty-two whales in his time."

From the above, we can make the following inferences:

(1) At least 52 whales were taken by the Shackleford Banks whalers between about 1830, when A. Guthrie would have been 13-14 years old, and 1874 (average 1.2 whales per year), by which time the 57-year-old Guthrie was serving as a whale spotter rather than as a crew member. H. Orlandah Phillips (Morehead City, NC, pers. commun., 7 April 1986) told us most of the shore whalers stopped going to sea at an age of about 50 years.[7]

(2) At least 52 whales were taken by the Shackleford Banks whalers between about 1845, when J. Willis was 15 years old, and 1881, when he died at the age of 51 (average 1.4 whales per year). Guthrie and Willis probably participated in the killing of some of the same whales. However, considering the differences in their age, some of Guthrie's 52 whales probably were killed before Willis began whaling, and some of Willis's 52 probably were killed after Guthrie's career had ended.

(3) At least ten whales were killed by the Shackleford Banks whalers between about 1875, when John Lewis was 16 years old, and about 1890 (average 0.67 whales per year), by which time Lewis had been living in Morehead City for several years and presumably had retired from whaling. The ten whales taken by Lewis definitely were different from the 52 taken by Guthrie.

(4) A very conservative conclusion would be that at least 62 right whales were taken by shore whalers in the vicinity of Cape Lookout between about 1830 and 1890.[8] Given the averages calculated above, ranging between 0.67 and 1.4, it is safe to conclude that an average of at least one whale per year was caught by the Shackleford Banks whalers during most of the 19th century.

A single harpoon in the North Carolina state museum supposedly was used in the capture of 29 whales (Brimley 1971a, p. 107). Since the collection of artifacts presently on display at the museum (Figs. 4 and 5) was donated by the family of John E. Lewis, we assume the harpoon was one of his, perhaps handed down from his father, James.[9]

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[7]According to St. John de Crèvecoeur (1782, p. 121-122), albeit referring to the men who participated in distant-water whaling voyages from Nantucket and Martha's Vineyard during the 18th century: "None of these whalemen ever exceed the age of forty: they look on those who are past that period not to be possessed of all that vigour and agility which so adventurous a business requires."

[8]A page of handwritten notes concerning Brimley's conversation with John E. Lewis in Raleigh, 3 August 1926, mentions that "Absalom Guthrie's period of activity probably covered the fifty years between 1825 & 1875, or thereabouts" (Brimley 1926). Also, the 10 whales taken by John E. Lewis were killed "after about 1875." All 62 whales were right whales; "finbacks plentiful but never molested."

[9]A handwritten note (definitely not in Brimley's hand) in the mammal files of the North Carolina State Museum of Natural Sciences, Raleigh, dated 19 July 1955, states, apparently on the authority of John E. Lewis's son Captain Mick L. Lewis of Morehead City, that James Lewis killed 22 whales with a lance before guns were in use at Shackleford Banks. This statement may or may not be associated in some way with that by Brimley concerning the harpoon on display in the museum. If, as alleged, guns were not used by the North Carolina whalers before about 1874, the 22 whales would have to have been taken before that time. Thus, they would likely be a part of the 52 taken by Absalom Guthrie and James Lewis between about 1830 and 1874.

H.H. Brimley (1971b, p. 109) was "more or less closely associated with" four different right whales taken at Cape Lookout after 1880, the year of his arrival in North Carolina. One was the whale "Mayflower," whose skeleton is on display at the North Carolina State Museum of Natural Sciences in Raleigh; two were the small male and large female taken in March 1894; and the fourth was the whale "Mullet Pond," whose skeleton is on display in the natural history museum at the University of Iowa (Brimley 1933; Brimley and Brimley n.d.; Thomson 1987) (Fig. 10).

A Captain Stacy [Guthrie?], who was born in 1882, was involved in three whale kills "as a lad" on Shackleford Banks (Anonymous 1984). Since his family moved to Harkers Island when he was 16, these three kills probably were made between about 1890 and 1896. At least two of these three kills are probably included in Table 3.

Coues (1871), who was stationed at Fort Macon during 1869 and 1870, stated that two or three whales were taken each spring (M.B. Simpson, Jr., Columbia, MD, pers. commun., 4 Aug. 1987). Elsewhere, he referred to the capture of "an occasional whale in spring" (Coues 1974; M.B. Simpson, Jr., Columbia, MD, pers. commun., 4 Aug. 1987). The average annual catch by the Outer Banks whalers during approximately the late 1870s and early 1880s was four whales, averaging 1,800 gallons (about 57 barrels) of oil and 550 pounds of bone (baleen) each (Clark 1887a, p. 49). Paul (1961) and Paul and Paul (1975) claimed the average annual catch on Shackleford Banks during the late 19th century was one or two whales. Others have stated that the shore whalers took about one whale per crew per season, "but sometimes up to three would be caught" (Anonymous 1981; also see Phillips 1980). Charles B. Lewis, who lived on Shackleford Banks at Whale Creek from his birth in January 1876 until he was 12 years old (ca. 1888), claimed that he "never saw more than three whales killed in a year" and that in some years none was seen (Seymour 1984), but his experience was limited to the waning years of the fishery. Kerr (1875, p. 15*n*), referring to an earlier, more active period, stated that "sometimes 5 or 6 [whales were taken] in the course of one or two weeks."

Hunting loss

Some whales struck by the Outer Banks whalers were lost, although there are almost no data available to assess the significance of hunting loss in this fishery. Brimley (1908b) implied that during the late years of the shore fishery, misfiring of the bombs sometimes resulted in the loss of harpooned whales. Several instances are described in which a harpooned whale pulled a boat far from shore, forcing the men to cut the line or throw the drag out and give up (Brimley 1908a, b; Engle and Moore 1984). One such whale washed ashore "months later" near Wilmington, and a harpoon embedded in it was claimed by a Shackleford Banks whaler (Engle and Moore 1984). Presumably the North Carolina whalers marked their whaling tools, as was done elsewhere (e.g., Allen 1916; Edwards and Rattray 1932, p. 62), so that a "drift" whale found floating at sea or washed ashore could be claimed by reference to the marks on the embedded harpoons or lances.

In open-boat, premechanized shore whaling for right whales off southern Africa, the ratio of struck and lost whales to whales landed was nearly 1:1, and Best and Ross (1986) calculated a loss rate factor of 1.2 (one whale killed and lost for every five landed) to account "at least partially" for hunting loss. Since the technology and circumstances of this African fishery were similar to those of the North Carolina fishery (at least the 19th and early 20th century portion of it), we suggest that a loss rate factor of 1.2 be applied to the catch data from North Carolina to give a minimum estimate of total fishing mortality. Since 1.2 is near the low end of the range of loss rate factors calculated for various right whale fisheries in which hand harpoons and lances were used predominantly (Anonymous 1986), this estimate is more likely too low than too high.

Economics

The proceeds from whaling were apportioned to those involved in the business on a share, or lay, basis. According to Clark (1887a, p. 49), the value of a whale was generally divided into 30 or 40 shares. The men received one share each, the gunner one extra share, and each steersman an additional half-share. One share was apportioned to each boat and two shares to the gun. Brimley (1894; 1971b, p. 113) reported the shares from a large whale taken on 20 May 1894. Two shares went to each gun, one to the owner of each of five boats, 2/3 share to each full set of tackle (harpoons, lances, warps, drags, boat-spades, etc.), and 1/3 to the harpooner and steersman of each boat. Every crew member participating in the chase got one share. The owners of the kettles used for trying out the oil each received five gallons of oil. This whale necessitated 44 shares. Since it was worth more than $1900, each share was worth slightly over $43. At the time, baleen was worth $1.65 per pound; whale oil, $0.25 per gallon. After 36 barrels of "first quality" oil had been tried from this whale, "scrappers...made three barrels from the refuse left by the owners after they were through" (Brimley 1894). This "scrap" oil sold for $0.16 per gallon. The oil of whales killed in the early 20th century might have sold for $0.30 per gallon (Lynch 1969). That of a whale taken in 1916 supposedly was sold for $1.05 per gallon (Morton and Rogers 1984).

Individual right whales often were worth $1200 to $1500, taking account of the proceeds from oil and baleen (Kerr 1875, p. 15*n*). Clark (1887a, p. 49) estimated the annual return of the Beaufort whale fishery in 1880 as about $4500 (assuming a catch of four whales). The average profit on a caught whale during the late 19th century was about $35-40 per man (Engle and Moore 1984).

The oil and baleen were sold in Beaufort or Morehead City to the highest bidder (Brimley 1894). Some of the oil went to Baltimore by schooner, and some was shipped out of Portsmouth Island (Engle and Moore 1984). A "whale and porpoise factory" owned by Messrs Bell, Daniels, and Watson in Morehead City was described as "in full blast with thirty operatives in the various departments of the work" during February 1888 (*The Weekly Record*, Beaufort, NC, 24 Feb. 1888), a month when at least one, and possibly two, whales were taken at Cape Lookout (Table 3). The Moore Brothers and J.H. Potter of Beaufort apparently were among the bidders for whale products during the 1890s (Brimley 1894, 1899).

It is difficult, in retrospect, to assess the significance of whaling to the economy of the Outer Banks during the 18th and 19th centuries. Paul (1967, p. 120) suggested that whaling was an "important economic activity in the Beaufort area" during much of the 18th century. A resident of Carteret County, in describing the town of Beaufort in 1810, noted that the people there were dependent on the fisheries. Though the fisheries for finfish and shellfish probably were more dependable and possibly more remunerative, "something is done every year in the Whale fishery and much more in that of the Porpoise the oil of which usually sells at forty cents pr. gallon" (Newsome 1929, p. 399).

Though the monetary return may have been modest by some standards, the sale of whale products was one of the few ways inhabitants of remote communities on the southern Outer Banks could obtain cash (e.g., Seymour 1984; Engle and Moore 1984). However, it is probably true that the people did not depend on whales for their annual subsistence and that whales were but one of various renewable resources they exploited to survive. Stacy Guthrie, a whaler whose experience would have been mainly in the late 1880s and later (he was born in December 1882; Tolson 1984) stated (Engle and Moore 1984): "Whaling was not a sure business. Some seasons brought no whales at all. It was called a substitute, something one could not depend upon." Because whaling is so often made to sound romantic and exciting by those who study its history at a distance, Holland (1968, p. 18) may well have been correct in concluding that Outer Banks whaling "has received attention by writers out of proportion to its importance."

Whaling in adjacent and nearby states

Virginia—In 1698 the General Assembly of Virginia petitioned the Governor "to Issue out a Proclamation forbiding All Persons whatsoever to Strike or kill any Whales within the Bay of Chesapeake in the Limits of Virginia" (*Virginia Magazine of History and Biography,* vol. 21, 1913, p. 76). Their concern arose out of the fact that whales had been killed "within the Capes" of Virginia and that because of this whaling activity "Great Quantityes of Fish are poysoned and destroyed And the Rivers also made noisome and Offensive." The small amounts of oil and baleen exported to Great Britain from Virginia and Maryland during the 1690s and early 1700s (Table 1) may have been the result of this whaling activity.

On 21 April 1710 William Walker requested from the Council of Virginia permission to "goe a whale fishing in ye Bay of Chesapeake & along ye Coast of Virginia, And to take & Kill what whales, he or those imploy'd under him can..." (*Calendar of Virginia State Papers,* vol. 1, p. 140).

In 1751 the sloop *Experiment* of Williamsport became "the first vessel sent from Virginia in this employ [whaling]" (*Virginia Gazette,* 24 May 1751; *William and Mary College Quarterly Historical Magazine,* ser. 1, vol. 8, 1900, p. 6). On 3 May of that year the first whale was "brot in"; three more were struck but lost (*ibid.;* also see Starbuck 1878, p. 43, 171).

A small whale (8 feet, 1200 pounds; certainly not a right whale) was taken in Chesapeake Bay in 1840 by the crews of two schooners (Weiss et al. 1974, p. 110).

By the 1850s, whaling in Chesapeake Bay seems to have been long since abandoned. A person claiming to have been "familiar with the Chesapeake and its rivers forty years" wrote in 1858 that he had never heard of a whale in the bay (*The New Era,* New Bern, NC, 31 Aug. 1858). However, in summer 1858 a 43-foot whale was captured in North River. The means used to kill the whale—shooting it repeatedly from a small boat, then lancing it in the shallows with a "Toledo sword"—suggest that the captors were not professional whalemen. Also: "They tried to save the oil, but, not understanding the process, had to abandon it" (see Cope 1866b, for more details concerning the capture). This specimen has a long and confusing history in the literature. The confusion arose from the work of Cope (1865, 1866a, b, 1869) and was finally set straight by True (1904, p. 81-85). Though Cope identified the whale, in turn, as a right whale (1865, *Balaena cisarctica*), a humpback (1866a, *Megaptera osphyia*), and a blue whale (1866b, *Sibbaldius laticeps;* 1869, p. 17, *Sibbaldius tuberosus*), True identified it as most likely a fin whale and possibly a sei whale. True gave the position and date of capture as Mobjack Bay, near the entrance of Chesapeake Bay, between York River and Rappahannock River, 11 August 1858.

Another whale, species unspecified, was taken near New Point Comfort, Matthews County, north of Mobjack Bay, a few years previous to 1858 (Cope 1866b).

In 1882, an article in the *Whalemen's Shipping List* (39[52]:7 Feb.) stated:

> A whale 70 feet long grounded on the Eastern coast of Virginia a few days since, and a boat's crew of five men put off to attempt his capture. Their brutal efforts of attempting to stop his spout with a pole, driving one in three feet and breaking it off, and cutting a hole in his head with an axe, discharging ten shots into his body with a double barrelled gun, all proved to no purpose, and the tide rising, the leviathan got clear and made for the deep sea.

There is no way of telling the species of this large whale. The incident tends to support the supposition that during this time there was no organized shore whaling in Virginia.

Maryland—Two dead whales were driven ashore on Assateague Beach near Snowhill, Maryland, in December 1833 (Watson 1877, vol. 2, p. 429). The cause of their deaths was not known. Watson gave their lengths as 117 and 87 feet, and he claimed the two whales were expected to make 300 barrels of oil. All these figures were doubtless exaggerated. However, it was probably on the basis of the very high predicted oil yields that Cope (1865) judged these two whales to have been right whales.

South Carolina and Georgia—In spite of the fact that right whales were taken occasionally off South Carolina, we found no evidence for an organized shore fishery on that coast. Certainly by 1880 there were no "regular whaling camps" along the coasts of South Carolina and Georgia (Clark 1887a, p. 49). The circumstances surrounding the capture of a 40-foot male right whale in Charleston harbor on 7 January 1880 (first reported in the harbor on 27 December 1879; *The News and Courier,* Charleston, 31 Dec. 1879) corroborate the view that no regular shore-based whale fishery was prosecuted in that vicinity at that time (*The News and Courier,* Charleston, 8 Jan. 1880; 10 Jan. 1880; 13 Jan. 1880; 21 Jan. 1880; *New York Times* 29 [8841], 11 Jan. 1880; Manigault *in* Holder 1883; Clark 1887a, p. 49-52). A local newspaper described the capture as "an unprecedented event here" (*The News and Courier,* Charleston, 8 Jan. 1880).

A 60-foot carcass that washed ashore at Sullivan's Island early in 1880 "had already been stripped of its blubber and baleen at sea" (Manigault *in* Holder 1883). This whale probably had been killed by pelagic whalers (cf. Reeves and Mitchell 1986b) or by crews of the one or two schooners which Manigault claimed had been fitted out recently at Port Royal and Brunswick, Georgia, for whaling in local waters.

Manigault (1885) made no clear statement about how the term-pregnant female right whale taken "off the harbor of Port Royal" in February 1884 was killed. He noted that it was towed inside the harbor, "when the operation of cutting up was done at leisure." This may well have been the 60-foot right whale taken by the *Lottie E. Cook* of New Bedford on 22 February (*The News and Courier,* Charleston, 23 Feb. 1884).

In addition to the whales captured, another "very large" whale reportedly was at the mouth of Charleston harbor on 9 January

1880 (*The News and Courier,* Charleston, 10 Jan. 1880), and one was seen on 13 Jan. 1880 in Georgetown harbor (*The News and Courier,* Charleston, 17 Jan. 1880). Manigault (*in* Holder 1883; True 1883) claimed:

> This Black Whale [certainly meaning the right whale] is now sufficiently abundant off the coast of South Carolina and Georgia for its fishery to be carried on to a limited extent.

However, True (1884) noted that Manigault had retracted his "statement of the abundance of this species off the coast of South Carolina" (quoted above), having decided it was "due to a misunderstanding." True added that the species Manigault had in mind was more likely the humpback whale.

An article in the *New York Tribune Illustrated Supplement* (22 June 1902) claimed that "whales" had been seen frequently at Port Royal, SC, in the mouth of the Broad River as recently as two decades previously (i.e., ca. 1882) but that they had "abandoned that feeding ground." Eight whales, one of them "especially large," were seen there in early June 1902. Six of the smaller ones stranded. A large whale was seen in shallow water in lower Charleston harbor a few years prior to 1911 (*Charleston Evening Post,* 7 Feb. 1911).

On 4 May 1900 a 66-foot whale carrying a harpoon with 30 feet of rope attached came ashore in Horry County, near Conway, SC (*New York Tribune,* 6 May 1900). "It is doubtful if there is a whaler within two thousand miles. More than half a century ago a small whale came ashore on the Carolina coast." The author of this article appears to have been unaware of the whale fishery on the Outer Banks, as the stranding took place less than 200 miles from Cape Lookout, NC, where whaling was still practiced in 1900.

There have been relatively few published sightings off South Carolina in recent years (Reeves et al. 1978; Mead 1986).

Florida—Natives of eastern North America south of the present Canadian border probably hunted whales before the arrival of the Dutch and British colonists. However, the archaeological and ethnohistorical record of such pre-contact whaling is sketchy. On the southeast coast of the United States, the only area where there is any evidence of aboriginal whaling is eastern Florida. The Tequesta Indians, who lived between the Florida Keys and Cape Canaveral, hunted whales in winter in shallow coastal waters (Larson 1970, p. 216 *et seq.*; also see Cumbaa 1980). The accounts quoted by Larson date from the 16th century. Though they vary in detail, all the accounts describe a method involving an approach to the whale by canoe, an Indian jumping onto the whale's back or neck, and the plugging of its blowholes by driving stakes into them. Though we share some of True's (1904, p. 27, 44) skepticism for the authenticity of the 16th-century descriptions of this whale fishery, we agree with Larson that there is sufficient evidence to accept that the Tequesta were whalers. Present knowledge of right whale distribution and behavior in Florida (Moore 1953; Layne 1965; Kraus et al. 1986) suggests the whales hunted by the Tequesta were right whales, particularly calves.

Though pelagic whalers often called at Fernandina, Florida, and occasionally killed right whales near there in the late 19th century (Reeves and Mitchell 1986b), we found no evidence of an organized commercial whale fishery on the Florida coast. On 12 April 1903 a whale 30 feet long was killed by fishermen at Cedar Key, FL, on the Gulf coast (*The Sun,* New York, 14 April 1903, p. 6), and in June 1916 a group of 14 small (25-35 foot) whales that came ashore at Pablo Beach on the northeast Florida coast were killed with rifles and processed for oil (*New York Herald,* 23 June 1916, p. 20). A mother right whale and her calf were chased by a charterboat fisherman near Pompano, FL, in March 1935 (Burghard 1935; Moore 1953). Both were shot with a high-powered rifle, but only the calf was secured with a harpoon line and towed to the dock at Fort Lauderdale.

Summary and Conclusions

Origins

The evidence that whales were actively hunted off North Carolina before about 1715 is not conclusive, though there is no doubt that commercial use of whales found stranded on the coast had begun long before this time. "Aside from residents of the sand banks utilizing those [whales] washing ashore, Carolinians apparently took little advantage of the proprietors' generosity until the 1720's, when New England immigrants to the Beaufort area engaged in whaling from boats" (Cain 1981, p. xxi). Whaling along the Carolina coast by vessels from the northward certainly had begun by 1719 and may have begun as early as the 1660s.

In part because of the remoteness of the communities where whaling took place, and probably in part because of the relatively small numbers of whales taken each year, the history of North Carolina shore whaling has remained outside the mainstream of whaling literature. True (1904, p. 77), for example, noted concerning the colonial period:

> The remark of Lawson in his Natural History of North Carolina regarding the absence of a regular whale fishery in these waters is apparently borne out by the colonial records and histories. Those which I have examined, such as Saunder's Colonial Records of North Carolina, Hawkes's History of North Carolina, and others, contain no mention of the matter.

Technology

There is no reason to think Native inhabitants of the Outer Banks were whalers, either before or after the arrival of white settlers. Thus, unlike colonial shore whaling in at least Nantucket (Little 1981; St. John de Crèvecoeur 1782), Martha's Vineyard (Banks 1966, Vol. I, p. 434), and Long Island (Ross 1902; Rattray 1953; Palmer 1959), the whaling in North Carolina seems not to have involved "Indians" as crew to a major extent. The technology used by the shore whalers was introduced by immigrants and visitors from New England and possibly New York (Long Island) and New Jersey (Cape May). It is probably significant that there were no major whaling ports in North Carolina, as there were in New York, Massachusetts, and New Jersey.[10]

[10]However, the occasional stops made by New England whaling vessels at Morehead City, Beaufort, and Wilmington during the second half of the 19th century did involve crew changes. For example, the schooner *Lottie E. Cook* of New Bedford hunted right whales on the Southeast U.S. Coast Ground in February 1881 and again in February and March 1882 (Reeves and Mitchell 1986b). In her account books for 1880-83 some of the crew of the *Lottie E. Cook* are shown to have been from Beaufort, NC (Account books in Peter Foulger Museum, Nantucket). The *E.H. Hatfield* took aboard crew at Wilmington in May 1881 toward the end of her winter-spring cruise for right whales along the Carolina Coast (see above). There is no suggestion that any of the Outer Banks whalemen during the 19th century ever went on long-distance whaling cruises. In contrast, some of the Long Island shore whalers did. Their exposure to pelagic whaling equipment and techniques may have influenced the way they whaled from shore. It is nevertheless interesting that the Long Island shore whalers were at least as slow as their counterparts in North Carolina in adopting whaling gun technology (Edwards and Rattray 1932, p. 56, 97).

For the most part, the technology was conservative. Use of the drug (drag or drogue), as described by Dudley (1725) for colonial New England whaling and Jones (1861, p.26) for American pelagic whaling, continued in North Carolina until virtually the end of the fishery. According to Lytle (1984, pp. 22-23), the use of drugs had been "largely abandoned" by American whalers by the middle of the 18th century. The technique of fastening to the struck whale and going for a "Nantucket sleighride," which was fully integrated into American pelagic whaling (St. John de Crèvecoeur, 1782, p. 123; Hohman, 1928, p. 160) and Long Island shore whaling (Edwards and Rattray, 1932), was adopted only to a limited extent by North Carolina's shore whalers. Also, the protocol aboard North Carolina whaleboats seems to have been less rigid than that observed on the boats launched from New England whaleships or from shore on Long Island.

Trends in whaling effort and stock size

By 1715, when we can be reasonably certain whaling had begun along the Outer Banks (at least by pelagic whalers from the northward), the western North Atlantic stock of right whales already had been hunted commercially for at least 70 years (see Introduction). In fact, if the right whales hunted by the Basques off Labrador and Newfoundland and in the Strait of Belle Isle and Gulf of St. Lawrence (Tuck and Grenier 1981; Barkham 1984; Cumbaa 1986; Aguilar 1986) belonged to this stock, then its commercial exploitation would have begun well over 150 years before the North Carolina fishery was established. It is likely that the North Carolina fishery, from its inception, depended on a stock of whales already reduced by whaling. According to Allen (1916, p. 158), the right whales of the western North Atlantic had, by the end of the first quarter of the 18th century, been "very greatly reduced in numbers."

If it is assumed that North Carolina whaling further reduced an already-depleted stock, then it is possible that the catch levels achieved in the early years were not maintained over a long period. The absence of evidence that the North Carolina coast was a major cruising ground for right whales after about 1760 (see Starbuck 1878; Townsend 1935; Clark 1887c) suggests that whaling effort there by New England whalers had declined by the 1750s. The lack of success experienced by the *Susannah* and her crew in 1753-54 (see Whaling as a Well Established Industry, above) is consistent with such an interpretation. Thus, from 1740 onwards, and particularly after 1760, we assume an increasing proportion of the annual catch was made by shore whalers rather than pelagic whalers, the latter becoming disillusioned with this cruising ground and so visiting it less frequently. With the discovery of a few right whales near Fernandina, Florida, and Brunswick, Georgia, during the 1870s, some whaling schooners from New Bedford and Edgartown began making winter cruises along the Carolina, Georgia, and north Florida coasts (Reeves and Mitchell 1986b). Though they did occasionally call at North Carolina ports, most of the actual whaling by these vessels was done farther south.

The pelagic whaling activity along the southeast coast during 1875-82 coincided with the increase in shore whaling effort noted by Earll (1887) and Clark (1887a) (see above; Table 4). Somewhat later (1884-88) there seems also to have been a marked increase in the right whale catch off Long Island (Reeves and Mitchell 1986a). The possibility should be considered that some increase had occurred in the right whale stock by the 1870s, and that this increase permitted and encouraged the increased effort to catch this species along the U.S. coast. However, economic and industrial factors need to be taken into account. For example, was the greater demand for right whale products, notably baleen, at this time adequate to cause the increased effort and catch? Also, the nature of our documentation needs to be borne in mind. For example, the Long Island "increase" in catch may be no more than an artifact of improved documentation of shore whaling activities during the 1880s.

Rates of removal

There is no reason to believe the catch by shore whalers ever exceeded about five whales per year. The yearly average was in fact probably less than that, at least during the late 19th century. The oil returns from various sources, suggesting single-season catches as high as 15 whales (see Catch Levels, above), indicate that a total of as many as 100 whales could have been taken in North Carolina during the 1720s, including the catches of both shore and pelagic whalers.

The data summarized in this paper and in Table 3 are too sparse to support elaborate extrapolations and interpolations across many decades. We propose that the figures in Table 5 be taken as crude but conservative estimates of removals in North Carolina, for use in any reconstruction of the western North Atlantic right whale's history of exploitation.

Table 5
Estimated take of right whales off North Carolina.

Years	Whales caught	Whales killed per yr[1]	Comments
1719-1730	10/year	12	Mainly by New England pelagic whalers.
1731-1760	5/year	6	By pelagic and shore whalers combined.
1761-1775	3/year	4	Mainly by shore whalers.
1776-1783	1/year	1	During the war years.
1784-1870	2/year	2.5	By shore whalers.
1871-1880	4/year	5	By shore whalers (based on Clark 1887a, p. 49; Kerr 1875, p. 15*n*).
1881-1899	2/year	2.5	By shore whalers.
1908	2	3	Table 3
1909	1	1	Table 3
1916	1	1	Table 3

[1]Having applied a loss rate factor of 1.2 (see text).

Stock survival and current distribution

In 1926 John E. Lewis (1926) reported: "Whales still come here [Cape Lookout] almost like they used to...." Gib Willis, a former whaler, believed during the 1980s that whales were as plentiful as they had been in the whaling days but that no one looked for them. He is quoted as having said (Seymour 1984): "I remember seeing two right whales and five fishing whales [?] in one day between Fort Macon and Cape Lookout. That would have been a right good whaling day!" In the early 1980s, Engle and Moore (1984) wrote: "Some of the old islanders say that there are just as many whales now skirting the coast in the spring as there were when the whalers were hunting them". Only one of their informants dissented from this view.

During the past few decades, the watch for and reporting of right whales in the Cape Lookout area have not been undertaken systematically, as they were in the whaling days. There are no permanent residents on Shackleford Banks. Fishermen, officials from the Cape Lookout National Seashore, and local naturalists occasionally have made and reported sightings (Reeves et al. 1978; Mead 1986). A whale, supposedly a right whale, washed ashore at Portsmouth in late March or early April 1931 (Brown 1931). Another large whale, identified as a right whale by Joe Rose, was seen in shallow water along the south shore of Lookout Bight in May 1947 (*The News and Observer*, Raleigh, NC, 16 May 1947). As a boy, Rose had helped his father capture right whales, so his identification was likely correct. A right whale was seen on 4 April 1986 off Shackleford Banks at the mouth of Lookout Bight (Dave Hartman, Cape Lookout Natl. Seashore, pers. commun. via Connie Mason, Natl. Park Serv., Beaufort, NC, April 1986; senior author examined photographs).

Twentieth-century sighting records generally uphold the view held by the 19th-century Outer Banks whalers that right whales come close to the North Carolina coast during their spring northward migration but pass too far offshore to be observed during their southward migration in autumn or early winter (Caldwell and Caldwell 1974; Reeves et al. 1978). However, the sightings compiled by Winn (1984) and Mead (1986) include enough mid-winter records (December-March) to suggest some overwintering along the North Carolina coast. Kraus et al. (1986) reported that a mother and calf photographed off Cape Lookout in March 1982 were observed in Cape Cod Bay in September 1982. While it may be consistent with available data to propose a pattern of northward coastal migration (mainly by mothers and calves?) and southward offshore migration, we believe the situation may be more complex. The levels of searching effort and the conditions for observation in different areas at various seasons have not been rigorously analyzed for bias.

The stock of right whales hunted along the Outer Banks was not extirpated. Right whales are still seen in winter along the coast from North Carolina to Florida. Their northbound migration brings some of them within several miles of Cape Lookout, onto the same grounds where 70 and more years ago the right whale supported a small but consistent whaling industry.

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